ROLE OF MODIFIED ALVARADO SCORING IN ACUTE APPENDICITIS AND ITS HISTOPATHOLOGICAL CORRELATION IN GOVERNMENT VELLORE MEDICAL COLLEGE HOSPITAL

A DISSERTATION SUBMITTED TO

THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY

In partial fulfillment of the regulations for the award of the degree of

M.S. GENERAL SURGERY – BRANCH I

DEPARTMENT OF GENERAL SURGERY

GOVERNMENT VELLORE MEDICAL COLLEGE AND HOSPITAL

THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY

CHENNAI

APRIL 2016

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Date:

Prof. Dr. R. Rajavelu M.S., FRCS
Guide and Chief,
Department of General Surgery,
Govt. Vellore Medical College.

Date:

Prof. Dr. R. Soundarapandian M.S.,
Head of the Department,
Department of General Surgery,
Govt. Vellore Medical College.

Date:

Prof.Dr.G.Selvarajan, M.S.,DLO.,
The Dean,
Government Vellore Medical College.

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Course	:	M.S GENERAL SURGERY
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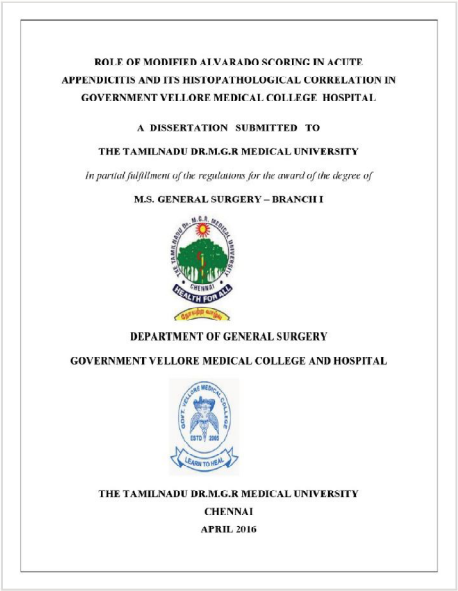

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I, **DR. SELVA SANKAR S** solemnly declare that this dissertation titled **"ROLE OF MODIFIED ALVARADO SCORING IN ACUTE APPENDICITIS AND ITS HISTOPATHOLOGICAL CORRELATION IN GOVERNMENT VELLORE MEDICAL COLLEGE HOSPITAL"** is a bonafide work done by me in Department of General Surgery, Government Vellore Medical College and Hospital, Vellore under the guidance and supervision of **Prof. Dr. R. Rajavelu M.S., FRCS. ,**Guide and Chief.

This dissertation is submitted to The Tamilnadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of the university regulations for the award of M.S., Degree in General Surgery (Branch – I)

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LIST OF ABBREVIATIONS

CT	Computerised Tomography
USG	Ultrasonography
RIF	Right Iliac Fossa
RLQ	Right Lower Quadrant
RUQ	Right Upper Quadrant

ABSTRACT

Background

Acute Appendicitis is more common surgical emergency encountered in day to day surgical practice. There are many methods for diagnosis of acute appendicitis both by clinically and radiologically. The delay in diagnosis usually leads on to various complications that causes increase in both morbidity and mortality of the patient.

Aims and objectives

To study the effectiveness of Modified Alvarado score in acute appendicitis & to correlate the same with post operative histo pathological report in acute appendicitis.

Methods

In this study 100 patients with features suggestive of acute appendicitis were included. Modified Alvarado score is used for scoring the patients and their post operative histo pathological features were evaluated and p value is calculated accordingly about p=0.0001 which is found to be significant by chi square test.

Results

Among the 100 patients the prevalence of acute appendicitis is more commonly seen in patients who were scored >7 (41/46) ie about 89% . The patients with score between 5-7 were found to be within the reactive lymphoid hyperplasia group (30/42) ie about 71%. The patients with score 1-4 was found to be in the group of reactive lymphoid hyperplasia(7/12) ie 58.3% and others with unremarkable pathology(5/12) ie 41.7%.

Conclusion:

Modified Alvarado score is used in diagnosing acute appendicitis[13] and with score > 7 is most commonly seen with acute appendicitis by post operative histo pathological report and patients with score 5-7 are observed and followed up[12]. Those with score 1-4 are being observed have shown less chances of appendicitis.

Keywords:

Acute appendicitis, Modified Alvarado scoring system, Histopathology.

TABLE OF CONTENTS

INTRODUCTION

Background:

Acute appendicitis is seen in day to day practice in emergency department. It is one of the commonest surgical emergency met out. It can sometimes confuse the practitioners by its presentation. The delay in early diagnosis or failure in early diagnosis may happen many times. This may lead on to the disease prognosis. This will further lead on to increase in morbidity as well as occasional mortality in the patient though there are many recent trends in investigatory modalities. Diagnosis of acute appendicitis is still in an mystery.

This may lead to increase in operative indication for the patient due to the fear of complication followed by it. There is increase in the negative appendicectomy rate of about 20 % seen in literature[(14)].

Therefore a scoring system was developed by Alvarado in 1986.This is used for the diagnosis of acute appendicitis there by reducing the rate of negative appendicectomy without causing increase in morbidity and mortality.

AIM OF THE STUDY

1. TO STUDY THE EFFECTIVENESS OF MODIFIED ALVARADO SCORE IN ACUTE APPENDICITIS.

2. TO CORRELATE THE MODIFIED ALVARADO SCORE WITH POST OPERATIVE HISTOPATHOLOGICAL EXAMINATION IN ACUTE APPENDICITIS.

REVIEW OF LITERATURE

Historical Review

It was from the Egyptian civilization the appendix was noticed. It rounds to about 3000 BC, the mummified parts of the body was taken out from the Egypt, the mummified organ from the body were placed in jars and appendix was named as the worm of the intestine from there.

In early days, the appendix has not been identified by people Aristotle and Galen as they dissected lower animals which have don't proper appendix. It was in the later period by the Celsus in the period of Ceaser discovered appendix. This is because he was given permission to dissect out the body of criminals executed by Caeser.

The drawings of appendix was seen early from the period of Leonardo da vinci in 1492. It was late by the Beregari da Capri, Anatomy Professor identified appendix as an anatomic structure in 1521.

It was discussed as a part of caecum by Vesalius and Pare in 1543 and 1582 respectively. The term appendix vermiform was coined by Phillippe verheyen in about 1710. It was compared to a twisted worm in 1600 by Lauretine.

Only in late 1886, Reginald Fitz[(1)] who described 1st the condition of appendix clinically. He is a pathologist from Harvard school. His study

is based on 257 cases analyzing of perforated appendix and 209 cases of typhilitis or perityphilitis. This was followed in few years later when Charles Mc Burney described the clinical findings as appendicitis prior to rupture and complications. It was this which lead on to early surgical intervention by the people who followed his school of thoughts.

Even though there was still increase in mortality and morbidity following intervention till the late 19th and early 20th century. It is done to the complication that lead onto the morbidity and mortality. The mortality rate was found to be reduced only after introduction of antibiotics and better anesthesia and per-operatives care for the patients with appendicitis.

10th century –First description of appendix was made

Around 1500- Anatomic note book of Leonardo da vinci containing about appendix

1524- Capri, described appendix

1543- Vesalius did likewise

1554-first description of a case of appendix by Fernel

1736-Amyand did first appendicectomy

1880-First successful trans abdominal appendicectomy for gangrenous appendix by Lawson Tait in London

1886-Reginald Fitz of Harvard medical school described natural history of the inflammed appendix, also coined the term Appendicitis

1889-Charles Mcburney of Columbia college of physician and surgeon in New York prescribed his series of cases of surgically treated appendicitis

1890- Sir Frederick Treves of London hospital advocated conservative management of acute appendicitis followed by appendicectomy after the infection has subsided

1894-Mcburney's described the right lower quadrant muscle splitting incision for removal of appendix

1902 -Oschner & Sherren proposed a regimen in his name for the conservative management to prevent the complication in appendicitis.

EMBRYOLOGY OF THE APPENDIX

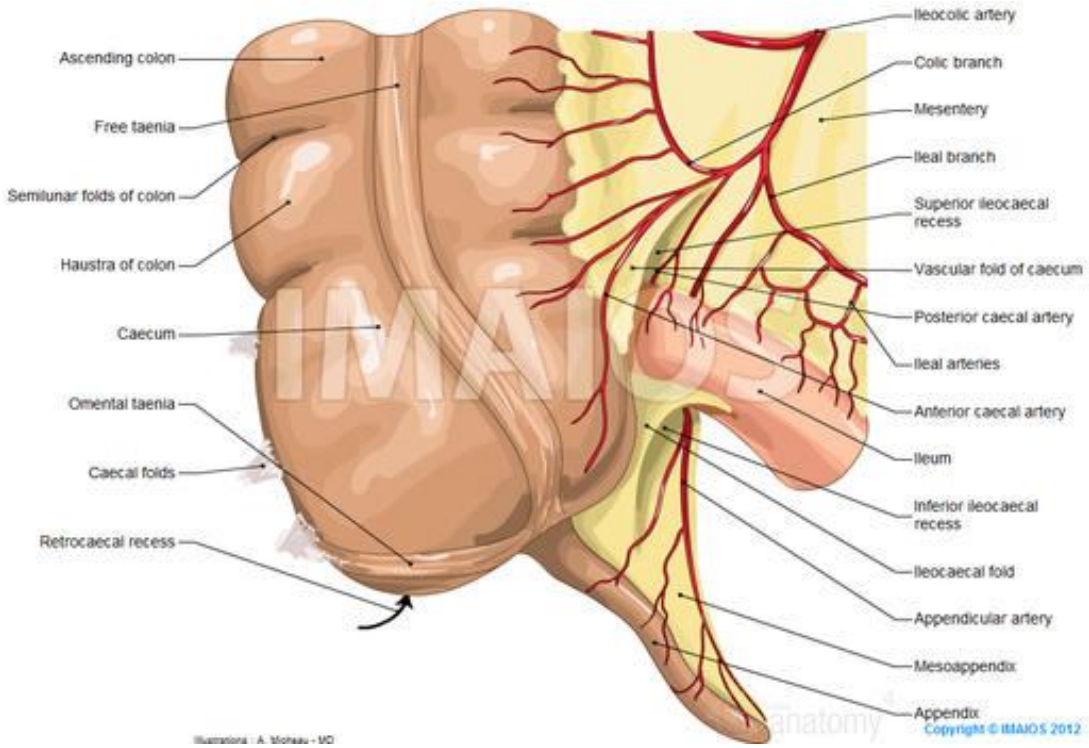
The appendix and caecum develop as out pouching of the caudal limb of the midgut loop in the 6th week of human development. Appendix by 8 week of gestation as an out pouching of caecum, this gradually rotate to more medial position as the gut rotates and the caecum become fixed to the right lower quadrant. The appendix, ileum, and ascending colon are the derivatives of midgut. By the 5th month, the appendix elongates into its vermiform shape. At birth, the appendix is located at the tip of the caecum, but, because of unequal elongation of the lateral wall of the caecum, the adult appendix typically originates from the postero medial wall of the caecum, caudal to the ileocecal valve.

ANATOMY OF APPENDIX

Appendix averages 9 cm in length, with its outside diameter ranging from 3 to 8 mm and its lumen ranging from 1 to 3 mm. Base of the appendix is consistently found by following the teniae coli of the colon to their confluence at the base of the caecum. Appendix tip, however, can vary significantly in location in its position.

Although usually located in the right lower quadrant (RLQ) or pelvis, the tip can occasionally reside in the left lower or right upper quadrants (RUQ).

Anatomy of Appendix



The appendix is supplied by appendicular artery , a branch of inferior division of ileocolic artery. It passes behind the terminal part of the ileum to enter the meso -appendix and supplies till the tip. The tip is the least vascular part of the appendix.

The appendicular artery is an end artery. In case of short meso - appendix the appendicular artery rests directly on the appendicular wall near the tip of the appendix. So, this may lead on to thrombosis and gangrenous changes in the appendix and lead on to perforation in appendicitis due to end artery.

The venous drainage corresponds to the artery and drains into the superior mesenteric vein which in turn drains into the portal vein.

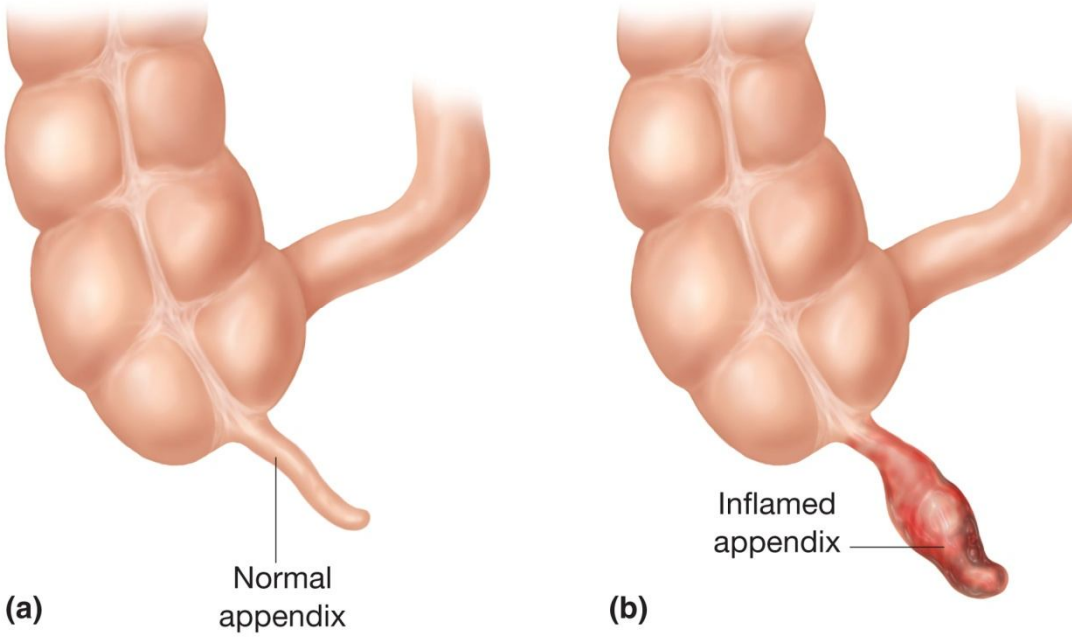
The lymphatic supply of the appendix drains into ileo colic lymph nodes directly or through appendicular nodes in the meso appendix.

PARTS OF THE APPENDIX:

The appendix presents with three parts,

- Base
- Body
- Tip

Normal & Inflamed Appendix



1. **Base:**

It is attached to the postero- medial wall of the caecum about 2 cm below the ileocaecal junction. All the three teniae of the caecum coverage to the base of the appendix. This anatomical fact serves as guide to the surgeon to search for the during appendicectomy.

2. **Body:**

It is a narrow tubular part between the base and the tip

3. **Tip:**

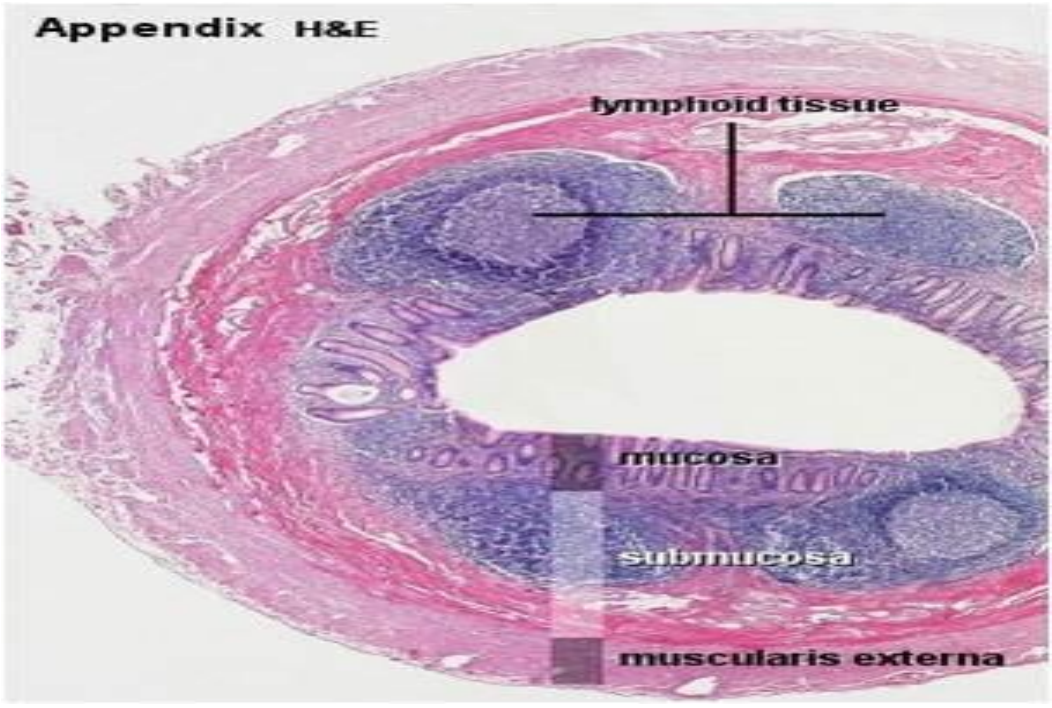
It is the least vascular distal blind end. It may be directed in various directions.

MICROSCOPIC ANATOMY

The appendix has relatively small angulated circular lumen as compared to its thick wall. The wall of the appendix consists of four layers from within outwards, these are:

- Mucosa
- Sub mucosa
- Muscle layer
- Serosa

Microscopic Picture of Appendix 11



1. **Mucosa:**

The surface of the mucous membrane is lined by the simple columnar cells and numerous goblets cells. It is devoid of villi. The intestinal glands (crypts of lieberkuhn) are few and short.

2. **Sub mucosa:**

It contains a ring of large lymphoid follicles with germinal centre. Hence, the appendix is commonly considered as an abdominal tonsil

3. **Muscle layer:**

It consists of outer longitudinal and inner circular layers of smooth muscle.

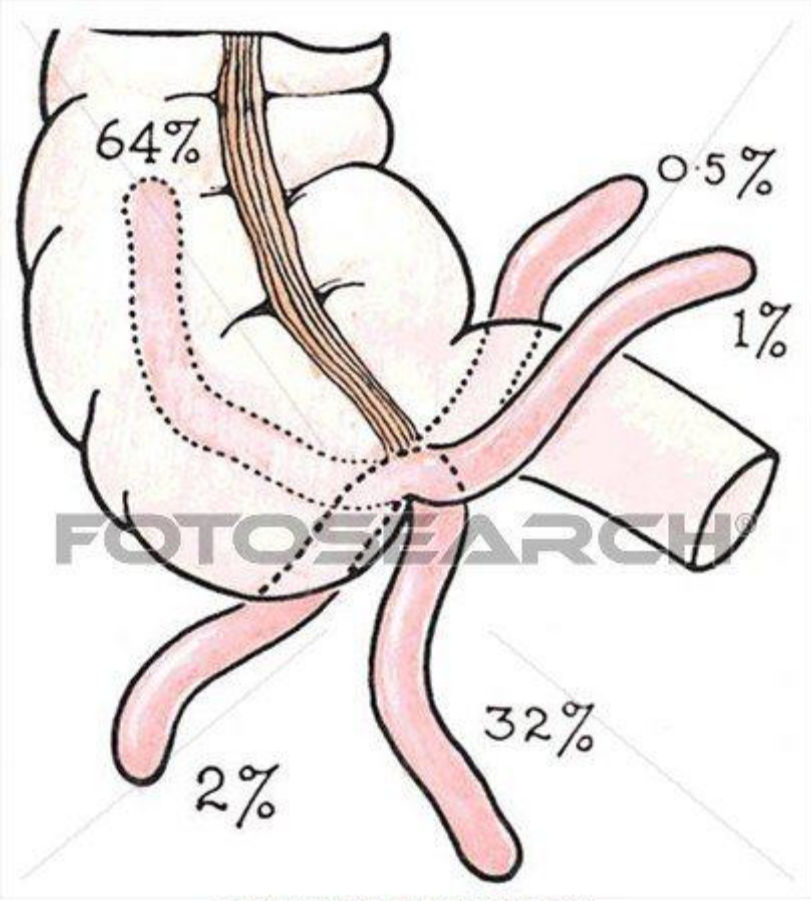
4. **Serosa:**

It is made up of visceral peritoneum.

POSITION OF THE APPENDIX

The appendix usually lies in the right iliac fossa. The base of the appendix is fixed but the remaining part may occupy any of the following position which are often indicate with an hour hand of a clock.

Various Positions Of Appendix



Paracolic(11 o'clock) position:

The appendix pass upwards on the right side of the ascending colon in 2% of the cases.

Retrocaecal/retrocolic (12 o'clock) position;

The appendix passes upwards behind the caecum and the ascending colon. It is the commonest position of the appendix(68.28%)

Spleenic (2 o'clock) position:

The appendix passes upwards and medially in front of (pre illal) or behind (post illal) the terminal part of the ileum. The tip of the appendix points towards the spleen. The pre illal position is the most dangerous because the inflammation from the appendix spreads into the general peritoneal cavity. The pre illal position occurs in 1% of the cases and the post illal in 0.4% of the cases.

Promonteric (3 o'clock) position:

The appendix passes horizontally towards the sacral promontory. The position is very rare (<1%).

Pelvic (4 o’clock) position:

The appendix descends downwards and medially and causes the pelvic brim to enter the true pelvis. In female, it may be related to right uterine tube. It is the second commonest position.

Mid inguinal /sub ceacal (6 o’clock) position:

The appendix passes vertically downwards below the caecum (sub caecum) and points towards the inguinal ligaments. It occurs in 2% of the cases.

ACUTE APPENDICITIS

The partial inflammation of the peritoneum, in the iliac fossa, is sometimes set up by disease in the appendix. The appendix having been perforated by ulceration, occasionally by the lodgement of the faecal concretions in its cavity , extravasations' takes place ,and inflammation of a more severe and serious kind is originated. At times nature sometime succeed in limiting the inflammation to a part of the right side but it is at other time diffuse over the whole abdomen and quickly proves fatal.

Inflammed Appendix

ETIOLOGY

- It is common in young males
- It is common in white races
- Fibre rich diet prevents the appendicitis. Less fibre diet increases the chance of appendicitis
- It is common in may and august- seasonal variation - often called as epidemic appendicitis
- Viral infection may cause mucosal oedema and inflammation which later infected by bacteria causing appendicitis
- Family history may be relevant in 30% of appendicitis in children with appendicitis occurring in first degree relatives
- Obstruction of the lumen of appendix causing obstructive appendicitis
    1. Blockage occur due to faecoliths, stricture, foreign body, round worm, thread worm
    2. Adhesion and kinking - carcinoma caecum near the base, ileocaecal crohn's disease

- Distal colonic obstruction
- Abuse of purgatives
- Faecolith Is The Most Common Cause

ORGANISM:

- E.coli (85%)
- Enterococci (30%)
- Streptococci
- Anaerobic streptococci
- Clostridium welchii
- Bactriodes

Pseudo appendicitis:

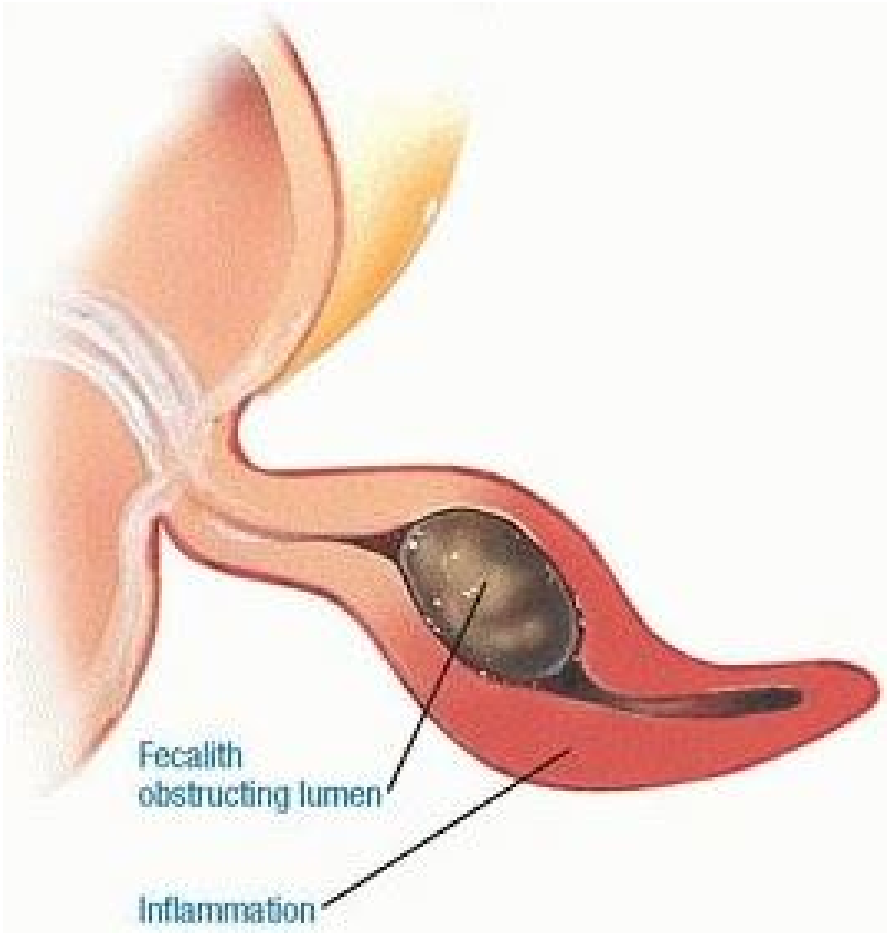
It is appendicitis due acute ileitis following yersinia infection. It is often due crohn's disease

PATHOGENESIS

- Acute inflammation of the mucus membrane with secondary infection without obstruction causes acute non obstructive appendicitis. It may lead into resolution, fibrosis, recurrent appendicitis or eventual obstructive appendicitis.

- Luminal obstruction by faecoliths

OBSTRUCTION BY FECOLITH



- Lymphoid hyperplasia, pin worm (oxyuris vermicularis) , other worms, foreign body , carcinoma/ crohn's disease it leads to mucus and inflammatory fluid collects inside the lumen. This causes increase in the intra luminal pressure in the appendix which leads to blockage of lymphatic and venous drainage. This further causes increase in oedema of mucosa & the wall of appendix . This leads to mucosal ulceration and ischemia which is usually followed by bacterial translocation through sub mucosa and muscularis propria.This leads on to acute obstructive appendicitis which further cause thrombosis of appendicular artery .The effect causes the ischemic necrosis of full thickness of the wall the appendix which leads to complication such as gangrenous appendicitis, perforation at the tip or at the base that can further progress to peritonitis in advanced stage.

- After perforation there is localisation by greater omentum and dilatation of ileum occurs this further causes suppuration and pus formation leading on to the formation of appendicular abscess.

- In severe appendicitis the localisation made by omentum with dilated ileum leads to the formation of appendicular mass which can be managed conservatively. In acute appendicitis there causes blockage of the lumen. The inflammation due to this rarely subsides with minimal inflammation. This leads on to the collection of mucus into the appendix. This causes enlargement of appendix with mucus leading on to mucocele formation known as mucocele of appendix.

TYPES OF APPENDICITIS

1. Acute Non Obstructive Appendicitis:(Catarrhal)

The inflammation of mucus membrane occurs with redness, oedema and hemorrhages which may go for following courses:

- Resolution
- Ulceration
- Fibrosis
- Suppuration
- Recurrent appendicitis
- Gangrene- rare initially in non obstructive type but later can occur.
- Peritonitis

2. Acute Obstructive Appendicitis:

Here pus collects in the blocked lumen of the appendix which is blackish, gangrenous, oedematous and rapidly progresses leads to perforation either at tip or at the base of the appendix. This leads to peritonitis that causes the formation of appendicular abscess or pelvic abscess. In this condition there will be thrombosis of appendicular artery

3. **Recurrent appendicitis:**

Repeated attack of non obstructive appendicitis leads to fibrosis, adhesion, causing recurrent appendicitis

4. **Sub acute appendicitis:**

It is the milder form of appendicitis usually managed by a course of antibiotic and later planned for laparoscopic appendicectomy.

5. **Stump appendicitis;**

It is retained long stump of appendix after commonly laparoscopic appendicectomy.

CLINICAL FEATURES:

Murphy's triad:

- Pain
- Vomiting
- Temperature

- **Pain** is the earliest symptom. The visceral pain usually begins around the umbilicus due to the distension of the appendix. Later the pain is felt only at the right iliac fossa i.e.(somatic pain) due to irritation of parietal peritoneum by the inflammed appendix. The pain gradually increases and becomes severe and diffuse that is a sign of spread of infection into the general peritoneal cavity.
- **Vomiting** is commonly due to reflex pylorus spasm. It commonly occurs after 4- 6 hrs after pain. If vomiting occurs early(i.e.) preceded pain then the diagnosis of appendix should be questioned.
- **Constipation** is the usual feature but **Diarrhoea** occurs because of irritation of the appendix in posterior or pelvic position.
- **Fever** usually about 99^{o}f & if it increases there must be a doubt of spread of infection. (i.e.) Peritonitis...
- **Tachycardia**
- **Foetor oris**

- **Urinary frequency** - inflammed appendix come in contact with bladder which cause irritation of the bladder & may lead on to hematuria due to irritation of the ureter by the tip of the inflammed appendix.
- **Tenderness** and rebound tenderness in Mcburney's point in right iliac fossa (Release sign / Blumberg's sign)
- **Rovsing's sign** : On pressing left iliac fossa pain occurs in right iliac fossa which is due to shift of bowel loops which irritates the parietal peritoneum
- **Cope's psoas test**: In case retrocaecal appendix , the hyperextension of right hip cause pain in the right iliac fossa due to irritation of psoas muscle
- **Obturator test**: In case of pelvic appendix internal rotation of right hip cause pain in the right iliac fossa due to irritation of obturator internus muscle
- **Baldwing's test**: Is positive in retrocaecal appendix- when legs are lifted of the bed with knee extended , the patient complain of pain while pressing over the flanks due to the irritation caused by the inflammed appendix.
- Per rectal examination - tenderness in the right of the rectum[37]
- Hyperaesthesia in sherren's triangle

Other signs:

- ✓ Bastede sign
- ✓ Dumphy's cough tenderness sign
- ✓ Bapat bed shaking test
- ✓ Heel drop test

Acute appendicitis in infancy:

- It is rare
- It has 80% chance of perforation with high mortality (50%)
- It is due to delay because of variable presentation by the children.
- Usually the patient with history of about three days

Acute appendicitis in children:

- Localisation not present
- So , peritonitis occurs early
- It requires early surgery
- Dehydration , septicaemia are common[(15)]

Acute appendicitis in elderly:

- Gangrene and perforation are common
- Due to lax abdominal wall, localisation is poor
- So, peritonitis set in early

Acute appendicitis in pregnancy:

- Incidence is 1 in 2000 pregnancy
- It is common in 1st and 2 nd trimester
- Appendix shifts to upper abdomen so pain is higher and more lateral
- Rebound tenderness and guarding may not be evident
- Total count will be very high with neutrophilia
- Risk of premature labour is 15%
- Foetal death occurs in early appendicitis is 5% but becomes 29% once appendix perforate in pregnancy
- After 6 month maternal mortality increases by 10 times than usual and also leads to premature labour
- Appendicitis is most common non gynaecological surgical emergencies during pregnancy
- Incidence of perforation is higher in 3 rd trimester

DIFFERENTIAL DIAGNOSIS

- Perforated peptic ulcer
- Ruptured / twisted Rt. ovarian cyst
- Acute cholecystitis
- Right ureteric colic
- Enterocolitis
- Right acute pyelonephritis
- Mesenteric lymphadenitis
- Lobar pneumonia
- Crohn's disease
- Acute pancreatitis
- Meckel's diverticulitis
- Acute crisis of porphyria
- Rt. Salphingitis
- Diabetic abdomen
- Ectopic gestation – ruptured Rt. side
- Typhilitis

Differential diagnosis in children:

- Meckel's diverticulitis
- Acute colitis
- Acute iliac lymphadenitis
- Intussuception
- Round worm colic
- Lobar pneumonia

Differential Diagnosis In Females:

- Ruptured ectopic gestation Rt.side
- Mittelschlmerz - rupture of ovarian follicle during menstural period
- Rt Ovarian cyst torsion[33]
- Salphingo oophoritis

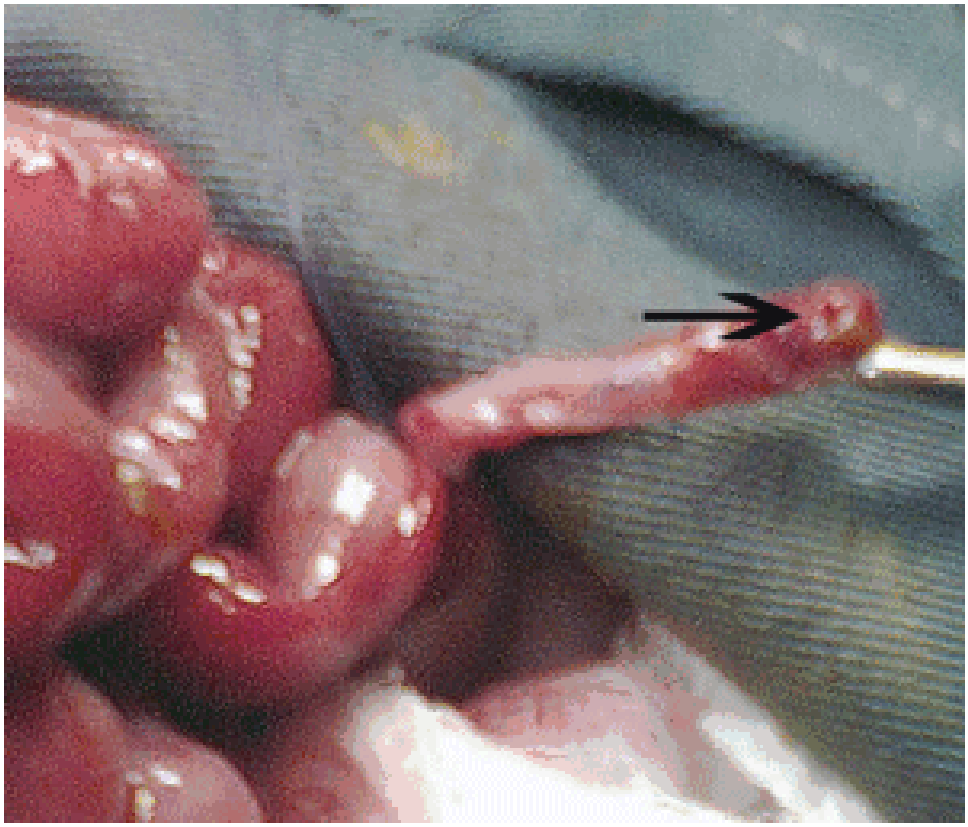
Differential diagnosis in elderly:

- Acute diverticulitis
- Carcinoma caecum
- Mesentric ischemia
- Intestinal obstruction
- Aortic aneurysm leak
- Crohn's disease

SEQUALAE OF ACUTE APPENDICITIS

- Resorption
- Relapse
- Recurrent appendicitis
- Appendicular mass
- Appendicular abscess
- Perforation

PERFORATION AT THE TIP



- Peritonitis
- Septicaemia
- Portal pyaemia
- Intestinal obstruction due to obstructive ileus, inflammatory adhesion, formation of band between appendix and omentum or appendix and small bowel[22].

LABORATORY STUDIES

The laboratory investigations are used as an adjunct to diagnosis of acute appendicitis . It must be easily available and inexpensive the laboratory reports should be available with rapid results and adequate sensitivity. This is used because to avoid (or) non availability of the imaging studies to aid in the diagnosis of acute appendicitis

The laboratory studies include

- WBC count
- Urine analysis
- CRP

The WBC count is usually elevated due to the presence of infection and differential count shows increase in neutrophils[8]. The high WBC count denotes complicated appendicitis with perforation (or) gangrene[41].

The urine analysis is used as exclusion for the diagnosis of nephrolithiasis (or) pyelonephritis.

Elevated CRP is found to be increase in value in the presence of infection on repeated testing of the sample while WBC count tends to decrease.

RADIOLOGICAL STUDIES

The following are the radiological investigation used for the diagnosis of acute appendicitis:

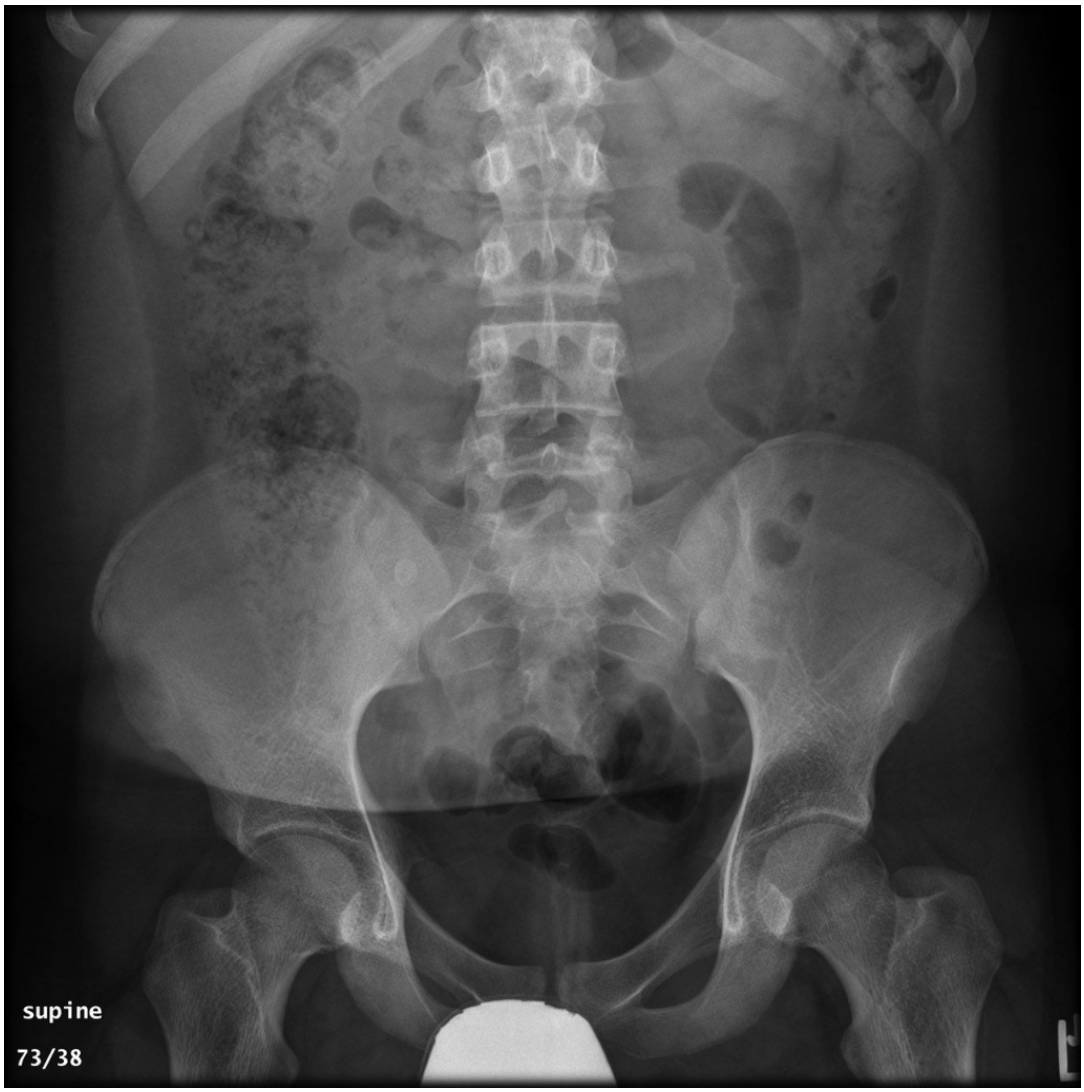
- X-ray abdomen
- USG abdomen
- CT abdomen

X ray features of acute appendicitis:

The following are the features of acute appendicitis in x-ray abdomen erect

- Fluid levels localised to caecum and terminal ileum
- Localised ileus with gas in the caecum ,ascending colon and terminal ilium
- Fecolith in the right iilac fossa
- Gas filled appendix
- Intra peritoneal gas
- Increase soft tissue density of right lower quadrant

X –RAY SHOWING APPENDICOLITH IN APPENDIX



- Deformity of caecal gas shadow occurring due to adjacent inflammatory mass
- Blurring of psoas shadow on right side
- Blurring of right flanks stripe & presence of radiolucent line between the fat of the peritoneum and transversus abdominis

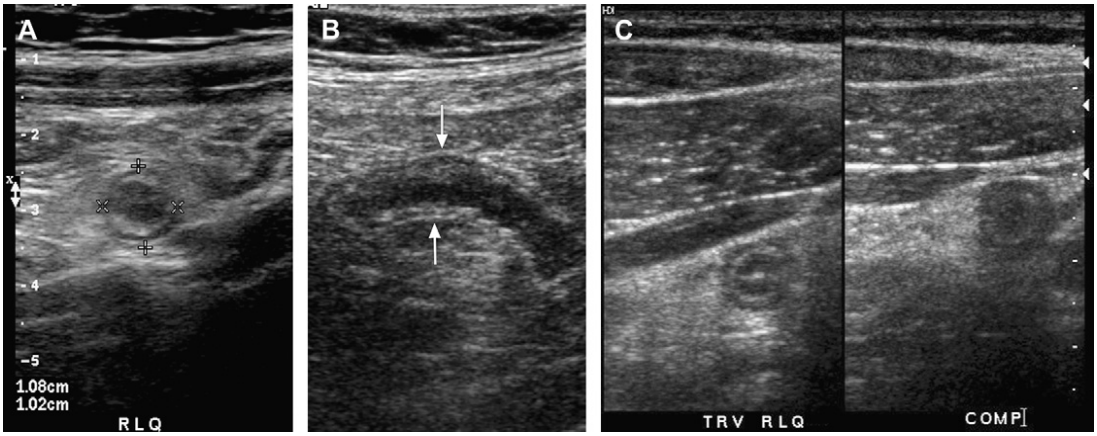
ULTRASOUND CRITERIA FOR THE DIAGNOSIS OF ACUTE APPENDICITIS

Ultrasound is routinely used for the diagnosis of acute appendicitis. The ultrasound is used as initial imaging technique in children and in young or pregnant women to avoid exposure to ionizing radiations[(2)]. It is more sensitive and specific than CT in diagnosing gynaecological cause of acute abdomen or pelvic pain which mimics appendicitis in young women.

Evaluation of appendicitis by ultrasound is purely operator dependant. Its use is limited in obese patients. It is performed by using the technique of graded compression with high resolution of 5 to 12 mhz by linear array transducer. It is visualised on ultrasound as blind ending tubular structure with alternating hypoechoic & echogenic rings.

The diagnostic ultrasound criteria for appendicitis include non-compressibility and distension with a diameter >6mm from outer wall to outer wall[(2)]. Identification of echogenic shadowing appendicolith also considered as diagnostic of appendicitis.

USG Images for Appendicitis



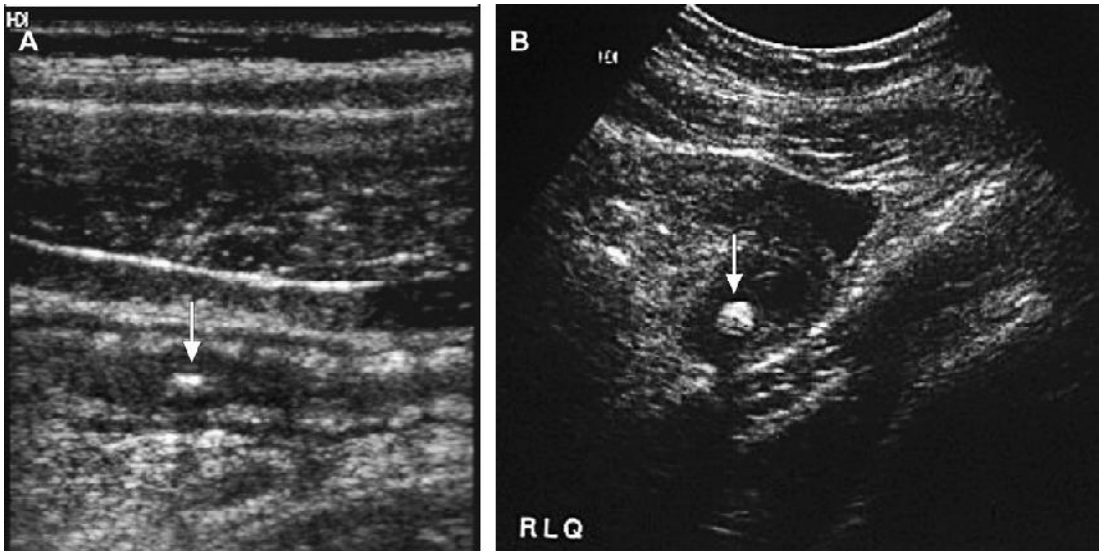
A. The appendix measures more than 1 cm on this transverse image consistent with appendicitis.

B. Sagittal image of a different patient with appendicitis reveals a distended fluid-filled appendix (arrows) that does not compress on.

C. Transverse view increased vascularity in the wall of appendix, a large amount of intra-luminal fluid and echogenic non-compressive periappendiceal fat are also noted[3].

Periappendiceal fluid is non-specific finding.focal loss of the laminated appearance of the appendiceal wall suggest impending perforation or gangrene. Inflammed periappendiceal fat is more common in patient to have perforation,to exclude appendicitis by ultrasound the entire appendix including the tip must be visualised, the appendix must be fully compressible and measures <6mm in diameter.

USG Images for Appendicolith



A. Note echogenic shadowing appendicolith (arrow) on a sagittal view of an inflammed appendix.

B. In this pregnant patient presenting with acute right lower quadrant pain, an appendicolith (arrow) is visualized on a transverse image of a distended appendix.

Ultrasound has been reported to have an accuracy of 71% to 97%,a sensitivity of 75% to 90% and a specificity of 86% to 100% for diagnosing acute appendicitis.

CT ABDOMEN IN ACUTE APPENDICITIS

CT is commonly is used for diagnosis of suspected acute appendicitis. The use of 5 mm section in CT has improved the imaging utility. The sensitivity of about 90% and specificity of about 80-90% for patient with abdominal pain. The recent studies shows that the use of high resolution multi detector CT (64- MDCT) with or without oral or rectal contrast gives about 95% of accuracy in diagnosis of acute appendicitis[(5)]. CT finding of acute appendicitis increase with severity of the disease.

The classical findings include

- Distended appendix with more than 7 mm diameter
- Circumferential wall thickening and enhancement
- Halo (or) target sign

- Peri appendiceal fat stranding
- Peri appendiceal edema
- Phlegmon
- Peritoneal fluid
- Peri appendiceal abcess

CT PICTURE OF APPENDICOLITH

TREATMENT

The treatment for acute appendicitis is operative procedure.it is usually carried out either by open or laproscopic method.

Open appendicectomy:

Approaches:

- Lanz crease incision
- Rutherford morison's muscle cutting insision
- Gridiron incision
- Right lower paramedian incision / lower midline incision
- Laproscopic approach
- Fowler weir approach

Procedure:

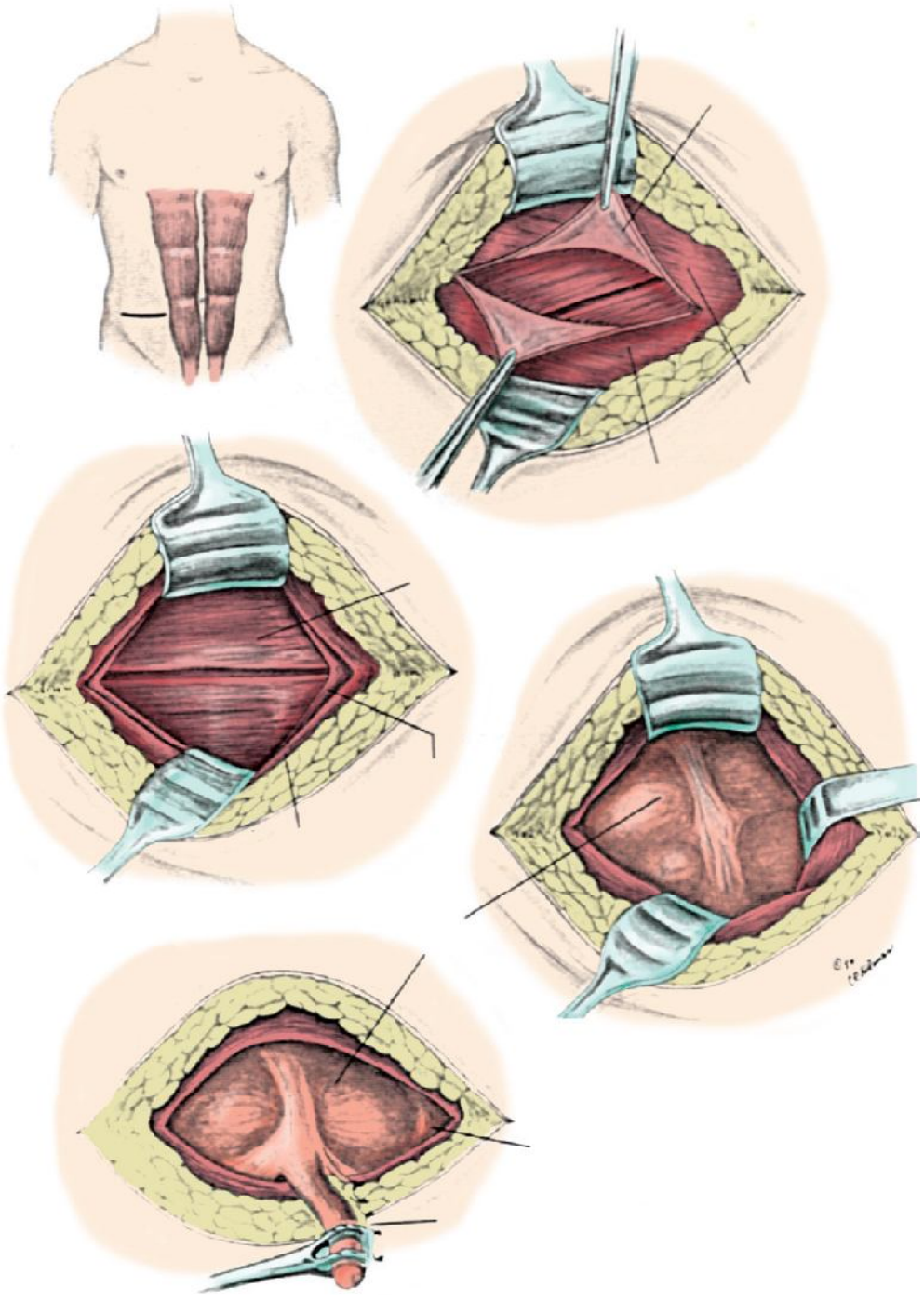
Usually under spinal / general anaesthesia skin is incised ,two layers of superficial fascia are cut, external oblique aponeurosis is opened along the line of incision. Internal oblique and transverse muscle are split along the line of Fibres. Peritoneum is opened in the line of incision. The caecum is identified by the convergence of taeniae and ilieo caecal junction. The omentum when adherent over the inflammed appendix is separated.

The appendix is held by the babcock's forceps then meso appendix with appendicular artery is ligated using silk, a pursing suture is placed around the base of the appendix. The base of the appendix is crushed with artery forceps and transfixed using vicryl. Appendix is cut distal to the suture ligature and removed. Stump is cleaned with antiseptics. The pursing suture is tightened so as to bury the stump.

Retrocaecal appendicectomy:

In difficult case it is carried out. When appendicitis get bursted up and pus oozes out ,the entire content is drained from the peritoneum to prevent future peritonitis.

STEPS OF APPENDICECTOMY USING LANZ INCISION



Post operative care:

- Nil per oral till bowel sound are heard
- Intravenous fluid
- Antibiotics
- Analgesics

Oral diet can be started, after bowel sound heard. The post operative early ambulation help the patient for speedy recovery and strength the abdominal muscles.

Complications of Appendicectomy:

The following are the complication that occurs during (or) post operatively following appendicectomy.

- Paralytic ileus
- Reactionary hemorrhage due to slipping ligature of appendicular artery
- Residual abscess
- Faecal fistula
- Pylephlebitis
- Adhesion , kinging and intestinal obstruction
- Right inguinal hernia due to injury to ileo ingunial nerve
- Wound sepsis
- Deep vein thrombosis

Laproscopic appendicectomy :

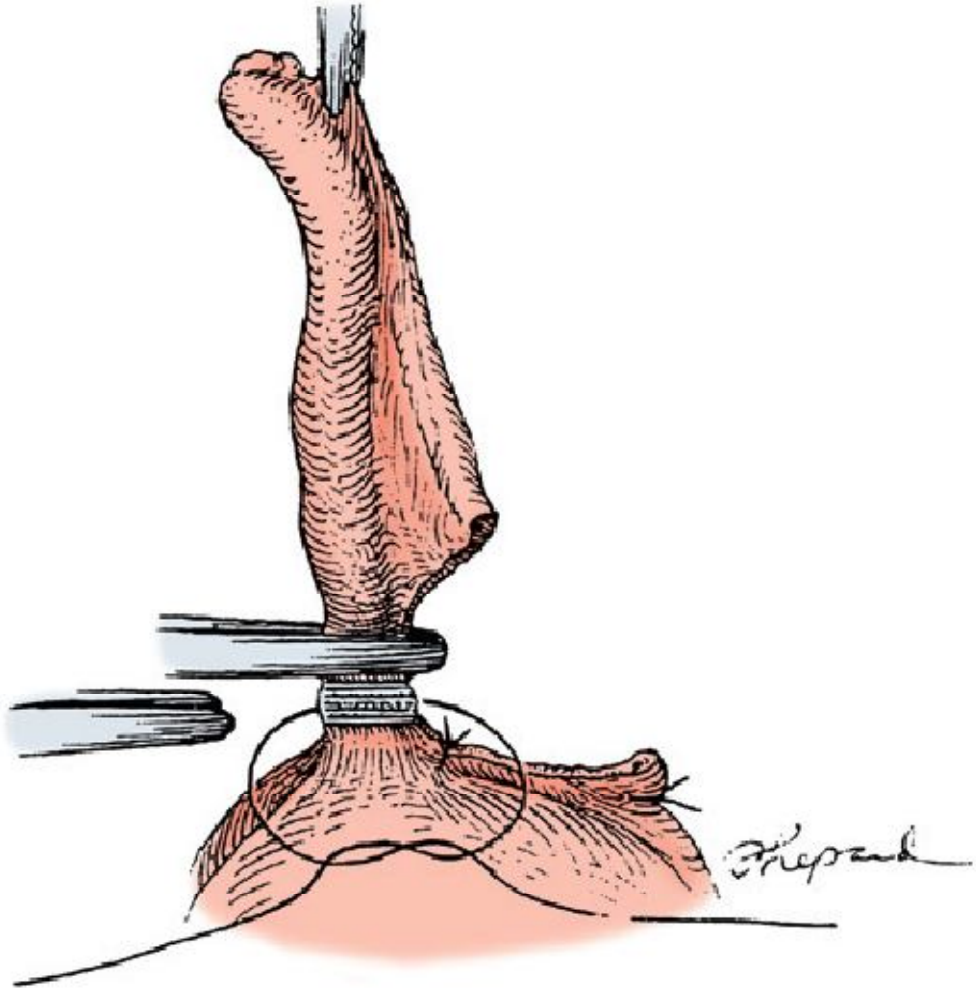
It has become gold standard method for the treatment of appendicectomy[7].

Technique:

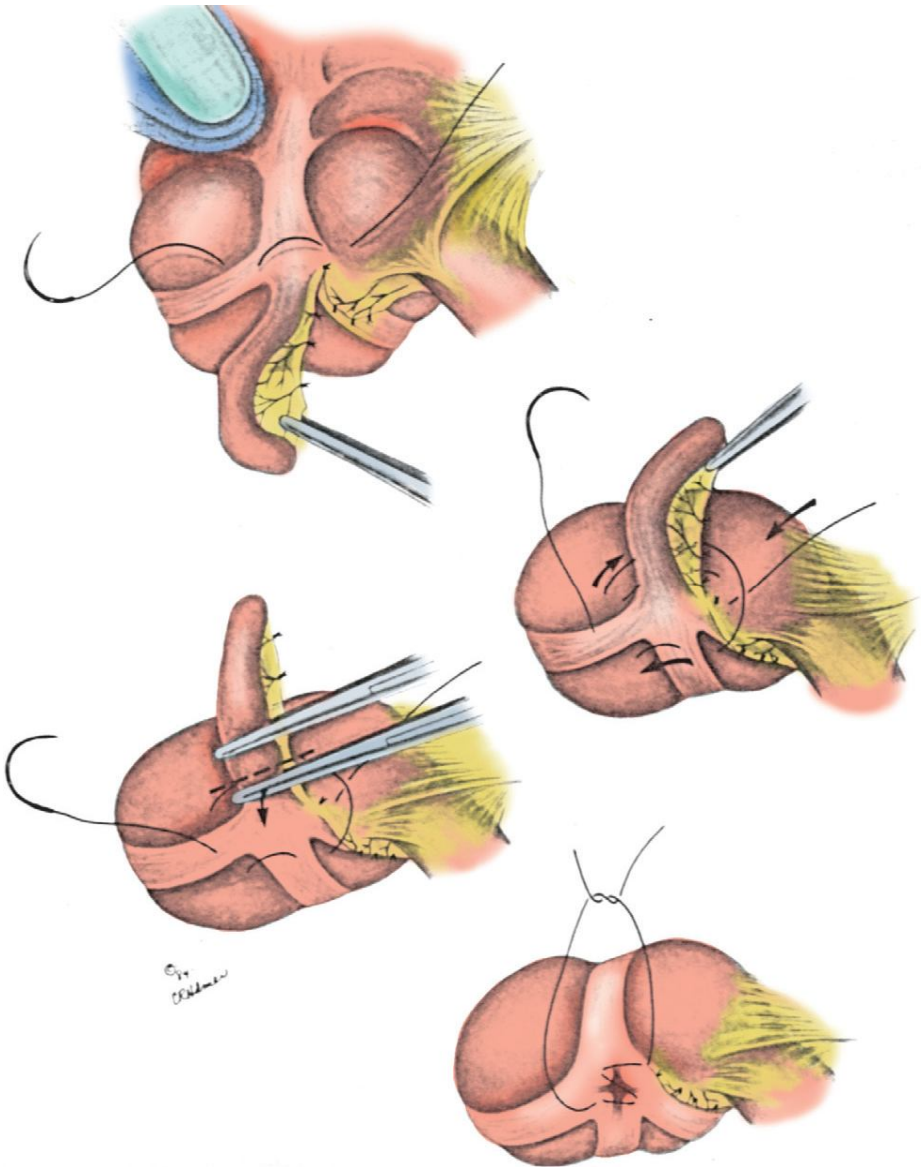
- Anaesthesia: general anaesthesia
- Position : head down with right tilt
- 10mm camera port facing umbilicus
- Working ports are two 5 mm, one on each side of lower abdomen or one on left side and another on lower midline.
- One of the working port can be 10 mm in difficult appendicectomies
- Pneumoperitoneum is created using co2
- Appendix held with grasper or babcock's forceps
- Mesoappendix is cauterised by bipolar or unipolar cautery
- Appendix is dissected up to the base of the appendix
- The base of the appendix is ligated with loop ligature, intra corporeal ligature can also be placed using vicryl 2-0 suture material.

- Appendix is removed through 10mm working port along with reducer
- Umbilical port is closed in two layers
- Other port are closed by skin suture
- The drain can be placed through one port in case of gangrenous or burst appendix.

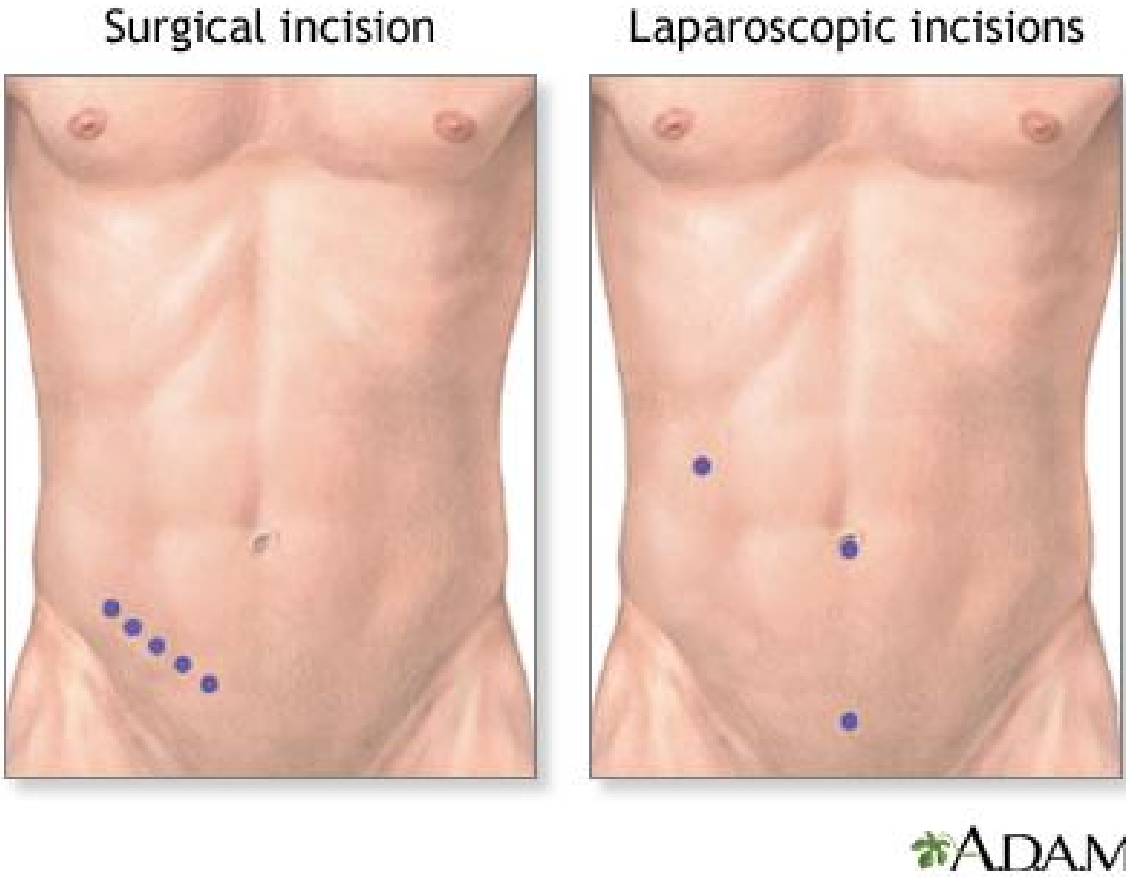
CRUSHING AT THE BASE DONE



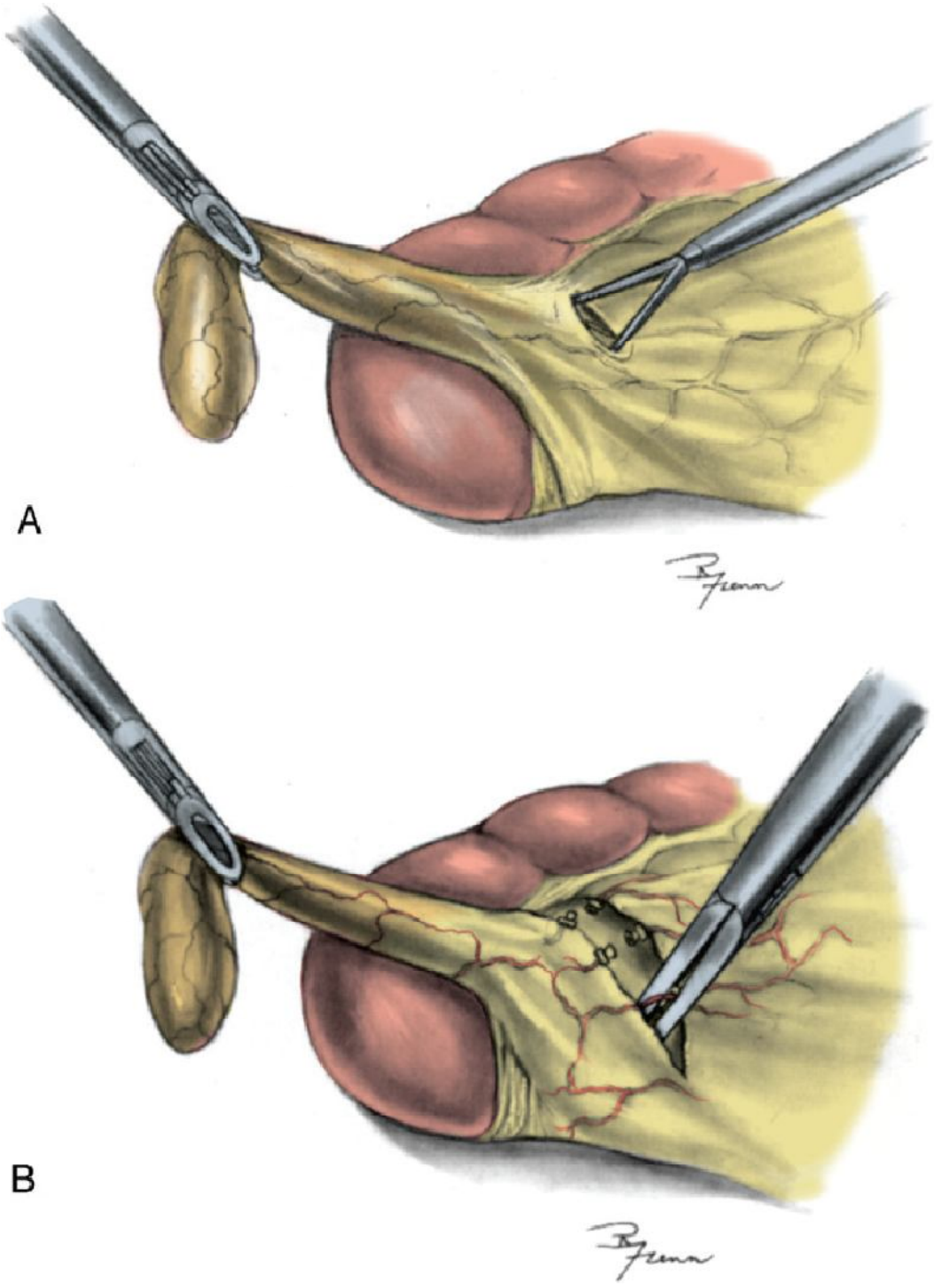
PURSE STRING SUTURING & BURRYING OF STUMP DONE



LAPROSCOPIC PORT SITE FOR APPENDICECTOMY



DISSECTING BASE OF APPENDIX



Complication of Laproscopic Appendicetomy:

- Injury to bowel , vessel while passing the port
- Complication of pneumoperitoneum
- Accidental injury to the bowel (or) vital structure due to cautery
- Bleeding
- Bowel perforation
- Peritonitis
- Fistula formation

Advantages:

- Diagnosis is confirmed
- Trauma of access is less
- Faster recovery
- Female pelvis structure are assessed properly

Disadvantages:

- Technical difficulty
- Cost factor
- Availability at peripheral level

MATERIALS AND METHODS

This study includes the population of 100 patients. The 100 patients are those who attended the emergency department from august 2014 to july 2015. The scoring system used is modified alvarado scoring system. One of the criteria in this scoring system is not evaluated or droped out . This is because of the facility of non availability of the criteria ie, shift of neutrophils to the left as an emergency measure. All other criteria were taken into consideration.

All those patients admitted in the emergency department were included in the study. Routine examination was carried out after obtaining the history from them. This also includes obtaining the history for criteria of modified alvarado scoring system. Patient gynaecological and urological were excluded from the study population. All the 100 patients were evaluated by using modified alvarado scoring system. Then they are subjected to surgery and followed by histo pathological report

Out of 100 patients, all the 100 patients were under taken for surgery. The modified alvarado score was calculated according to the presenting feature of the patient in the emergency department. The calculation of modified alvarado score is divided into three grading,

- Grade 1: values 1 to 4
- Grade 2: values 5 to 7
- Grade 3: values more than 7

The grading is calculated and they are correlated with histopathological reports. They are futher analysed and tabulated in the following variables. The variables are as follows,

- Age
- Modified Alvarado scores
- Pre operative evaluation / score
- Post Operative Histopathological reports

All the patients were followed routinely for the period of 6 months and then they are reviewed monthly.

OBSERVATION AND RESULTS

These study population of this study is about 100 patients. the 100 patients had underwent classical appendicectomy

Age distribution:

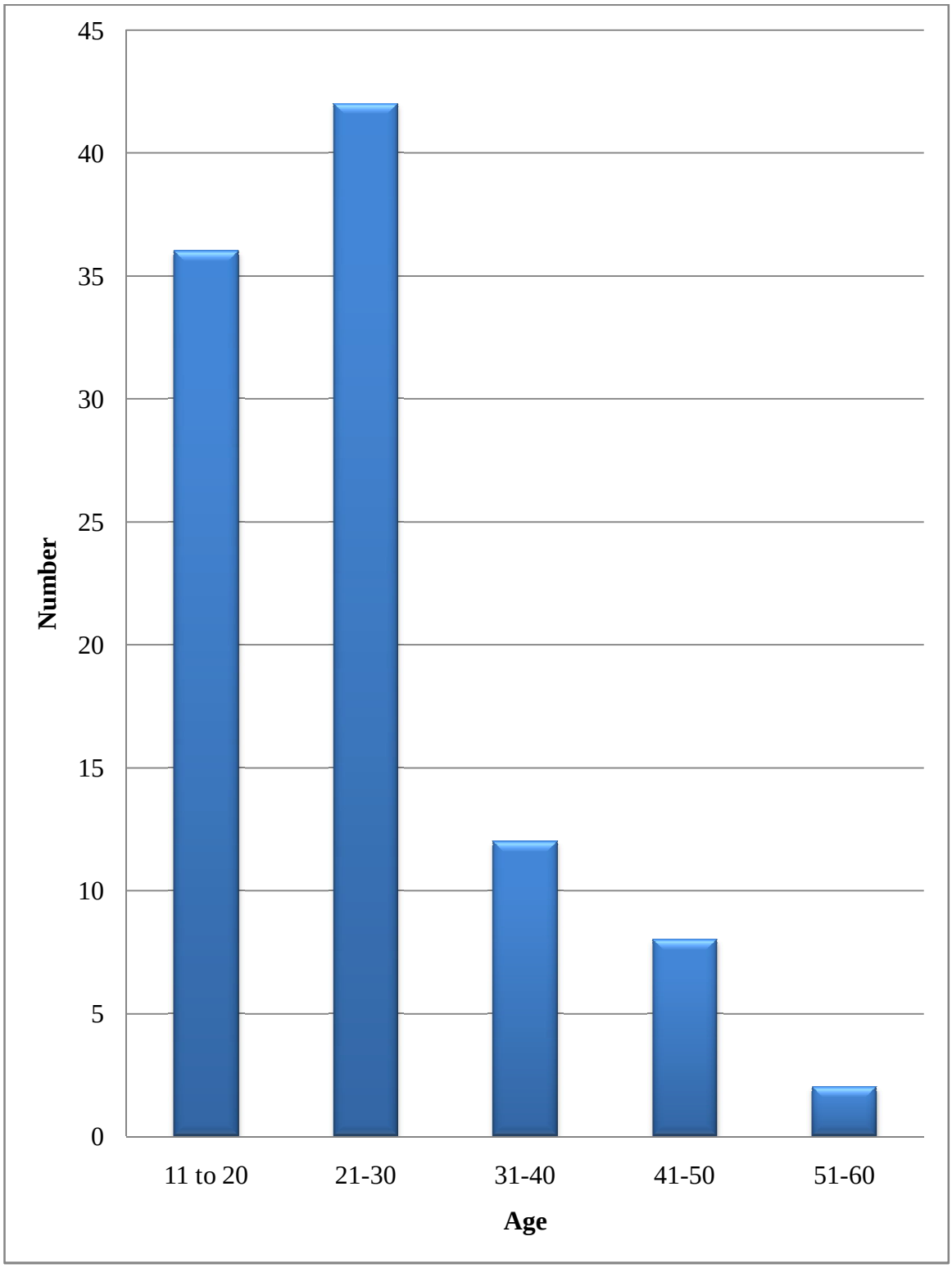
The incidence of acute appendicitis in the study population fall into 5 major groups. In this the incidence is maximum in 21-30 age group (of about 42% in the 2nd decade of life) . The least incidence of occurance is seen in 51-60 age group (of about 2 % in the 5th decade of life)

This shows the incidence of acute appendicitis classically seen in the age group of 21-30 due to the increase in the presence of clinical cases in this age group.

TABLE- AGE DISTRIBUTION

AGE (YEARS)	INCIDENCE (OUT OF 100)	PERCENTAGE
11-20	36	36%
21-30	42	42%
31-40	12	12%
41-50	8	8%
51-60	2	2%
Total	100	100%

AGE DISTRIBUTION IN BAR DIAGRAM



Distribution According to Modified Alvarado's Scoring:

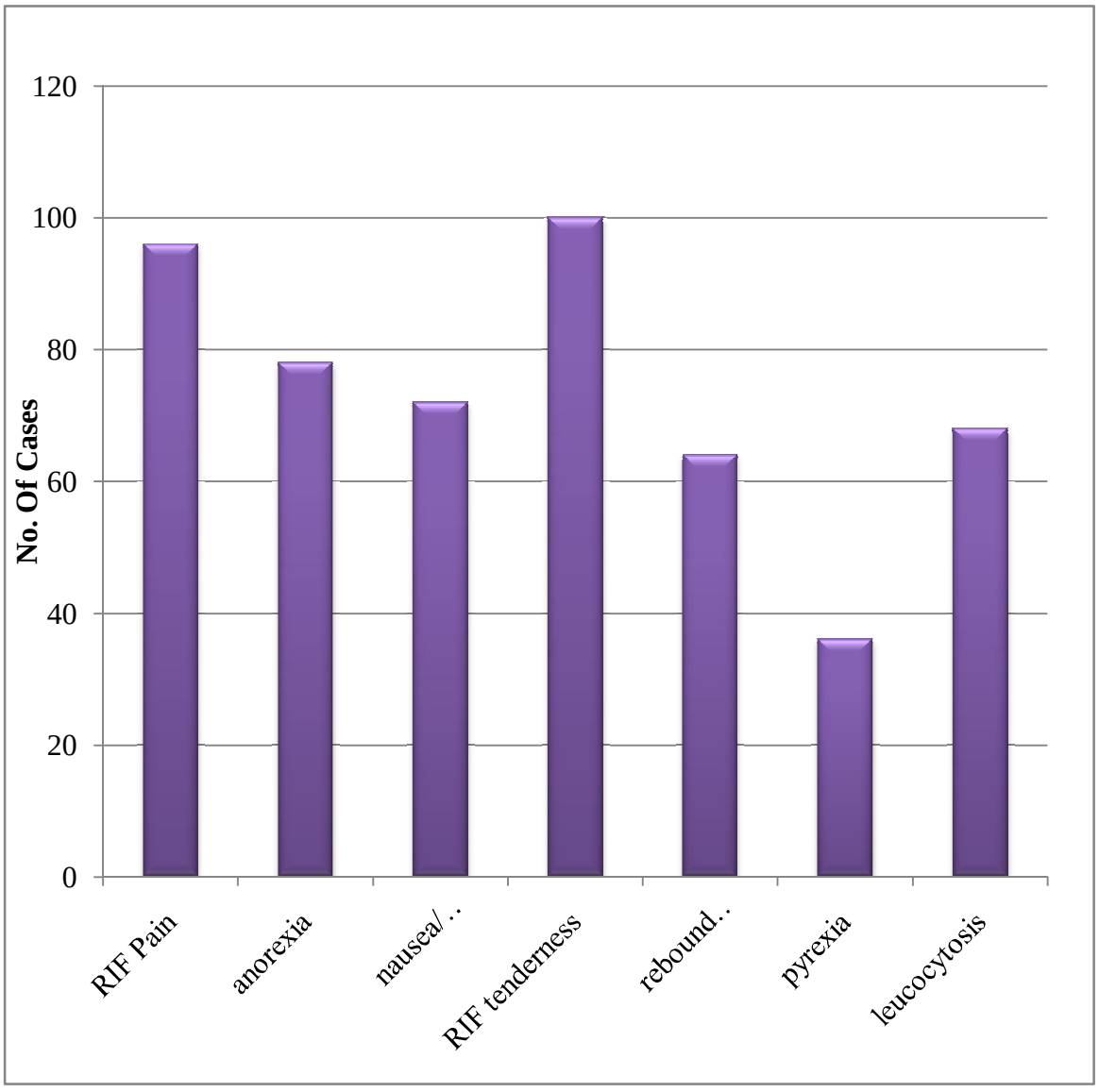
In this study the patients clinical features / symptoms are included. Age patients in this study were presented with right iliac fossa tenderness with 96% had right iliac fossa pain, pyrexia (36%), leucocytosis were presented only in a little proportion, anorexia, nausea / vomiting are seen in highest no. Of cases of about 78% and 72% respectively.

TABLE -3 MODIFIED ALVARADO COMPONENTS AND ITS PERCENTAGE

MODIFIED ALVARADO'S COMPONENTS	NO. OF CASES	PERCENTAGE
Right iliac fossa pain	**96/100**	**96%**
Anorexia	**78/100**	**78%**
Nausea/ vomiting	**72/100**	**72%**
Rif tenderness	**100/100**	**100%**
Rebound tenderness	**64/100**	**64%**
Pyrexia	**36/100**	**36%**
Leucocytosis	**68/100**	**68%**

This shows that the study population all are not presented in a single patient and symptoms varies in different proportion. This shows the alvarado components constitute of about varying degree of occurence according to the severity of illness.

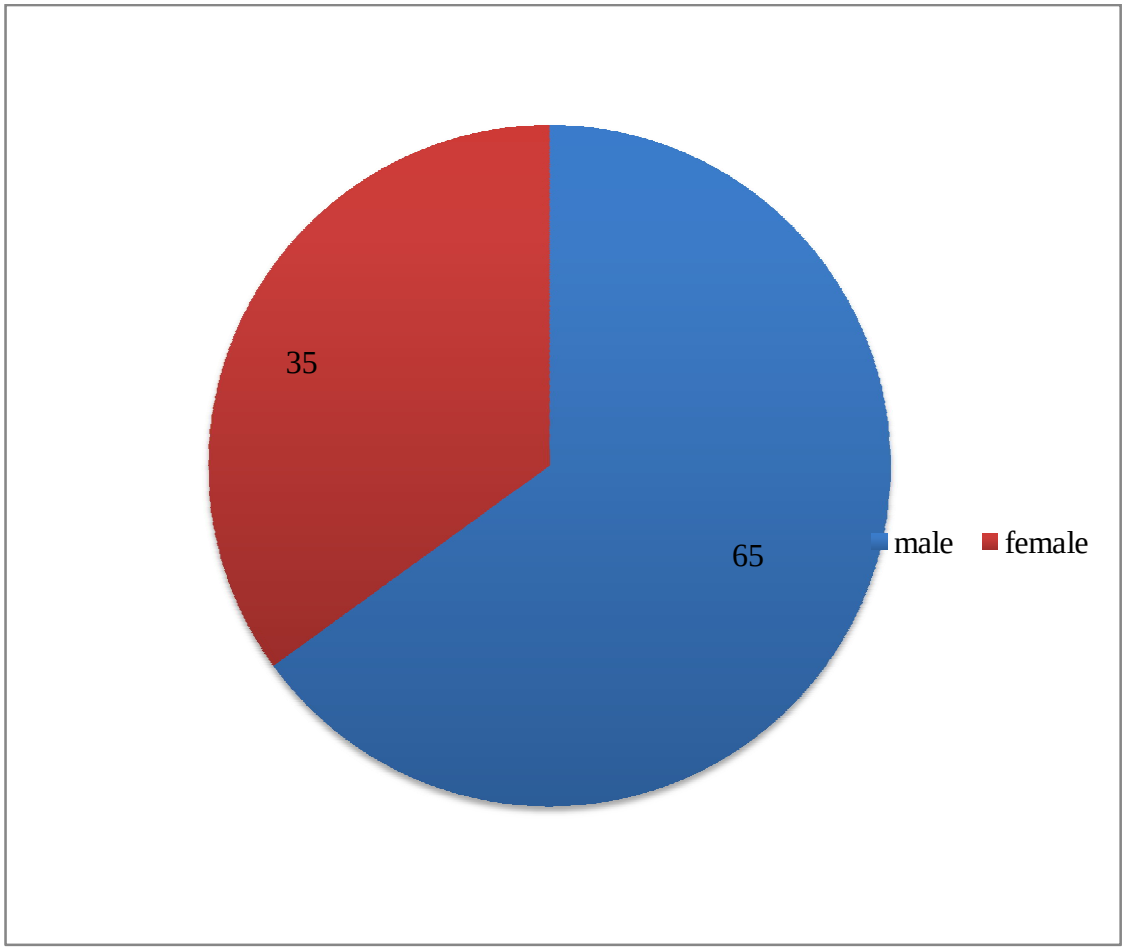
MODIFIED ALVARADO COMPONENTS AND ITS PERCENTAGE IN BAR DIAGRAM



Distribution according to sex:

Occurrence Of Appendicitis In This Study Population Of About 100 Population Has Been Classified According To The Occurrence Of Same Sex.

PIE CHART OF SEX DISTRIBUTION



This chart denote the occurrence of appendicitis is more commonly seen in males of about 65% (65/100 of patients) comparing with females of about 35% (35/100 of patients). This study denotes that the occurrence is seen most commonly in males indicating the presence of infection more in male than in the female population.

TABLE 2 (B) SEX DISTRIBUTION

SEX	NO.	PERCENTAGE
Male	**65**	**65%**
Female	**35**	**35%**
Total	**100**	**100%**

Distribution of Modified Alvarado scores:

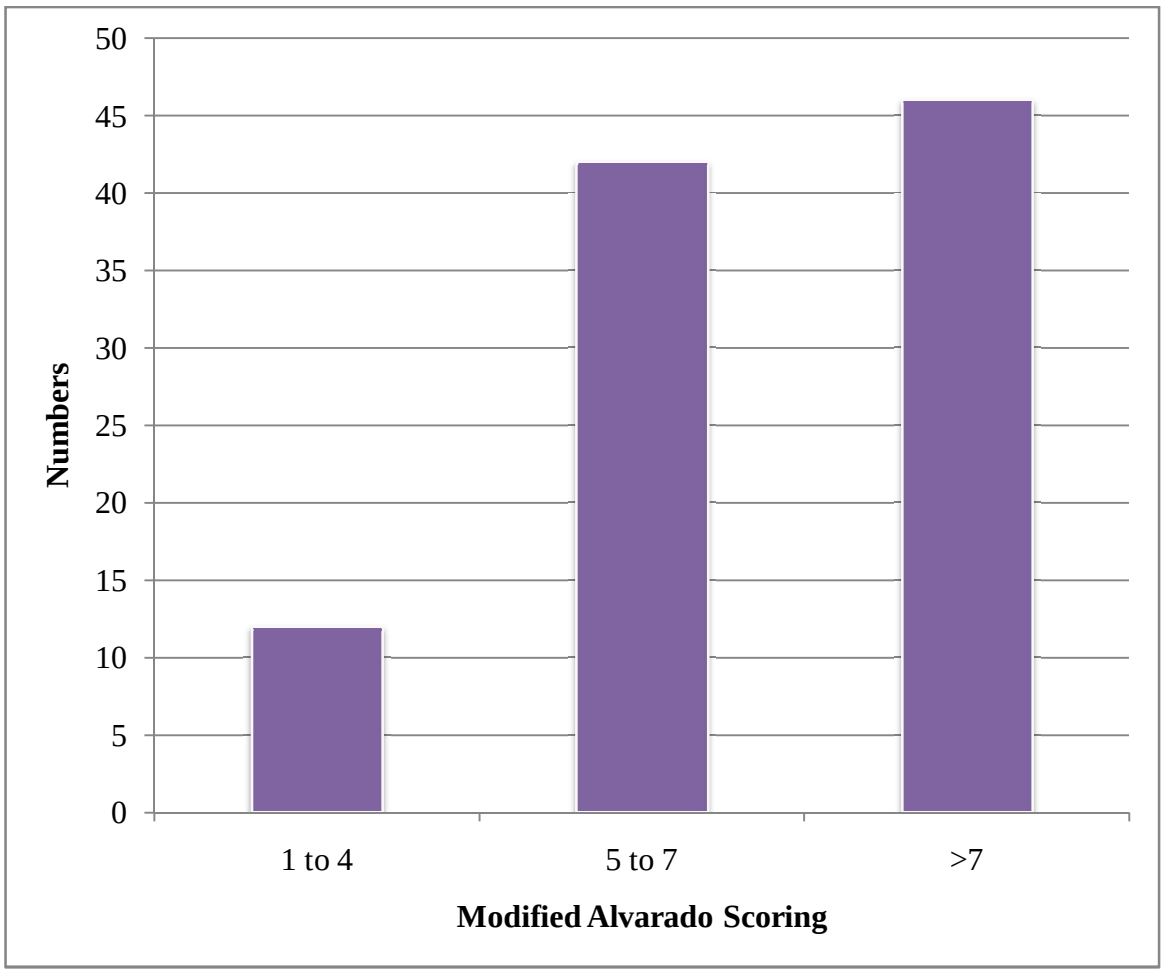
This scoring increases the type of involvements of patients according to the severity of infection. In this study population about 46% of patients (46/100) were seen to be in the scoring of about > 7.

TABLE- 4 DISTRIBUTION OF MODIFIED ALVARADO SCORE

MODIFIED ALVARADO SCORE	TOTAL	
	NO. OF CASE	%
1-4	12	12%
5-7	42	42%
>7	46	42%
TOTAL	100	100%

About 42% of study population were in the scoring of about 5-7 (42/100). The least incidence is seen in about 12% (12/100) is seen in the scoring value of about 1-4. This denotes the presence of severity of symptoms seen in the worthy the study group of about 46% (46/100) and to the level of 42% (42/100).

DISTRIBUTION OF MODIFIED ALVARADO SCORE IN BAR DIAGRAM



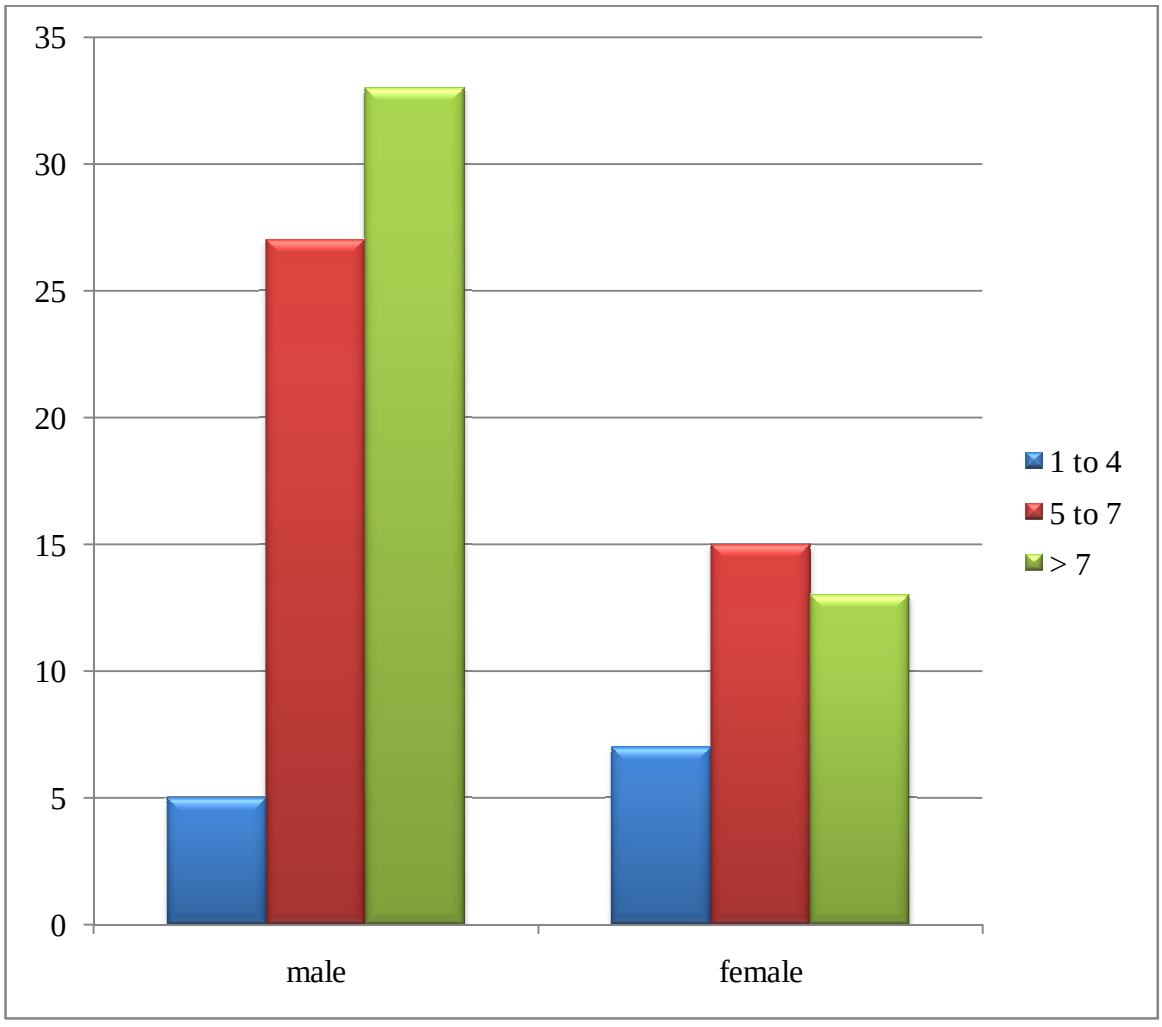
Different Grades of Modified Alvarado Scoring In Acute Appendicitis With Sex Distribution:

MODIFIED ALVARADO SCORE	MALE		FEMALE	
	NO. OF CASE	%	NO. OF CASE	%
1-4	5	7.7%	7	20.0%
5-7	27	41.5%	15	42.9%
>7	33	50.8%	13	37.1%
	65	100%	35	100%

According to modified alvarado scoring about 50.8% (33/65) of the patients were in the score of >7 in the male and 37.1% (13/35) in females.

Out of the patient in scoring 1-4 ie, 12 patients (12/100) , there is 5/12 (7.7 % of males) and 7/12 (20 % of females). There are about 42% (42/100) in the scoring of about 5-7 of this (41.5%) 27/42 where males and (42.9%) 15/42 were females

Different Grades of Modified Alvarado Scoring In Acute Appendicitis With Sex Distribution in Bar Diagram



This were correlated with the sex distribution by chi square test of p value (p= 0.15) which shows which is not significant.

Histopathological correlation with modified alvarado scoring:

The following are the observation made with the histopathological reports of the patients who have undergone appendicectomy after alvarado scoring.

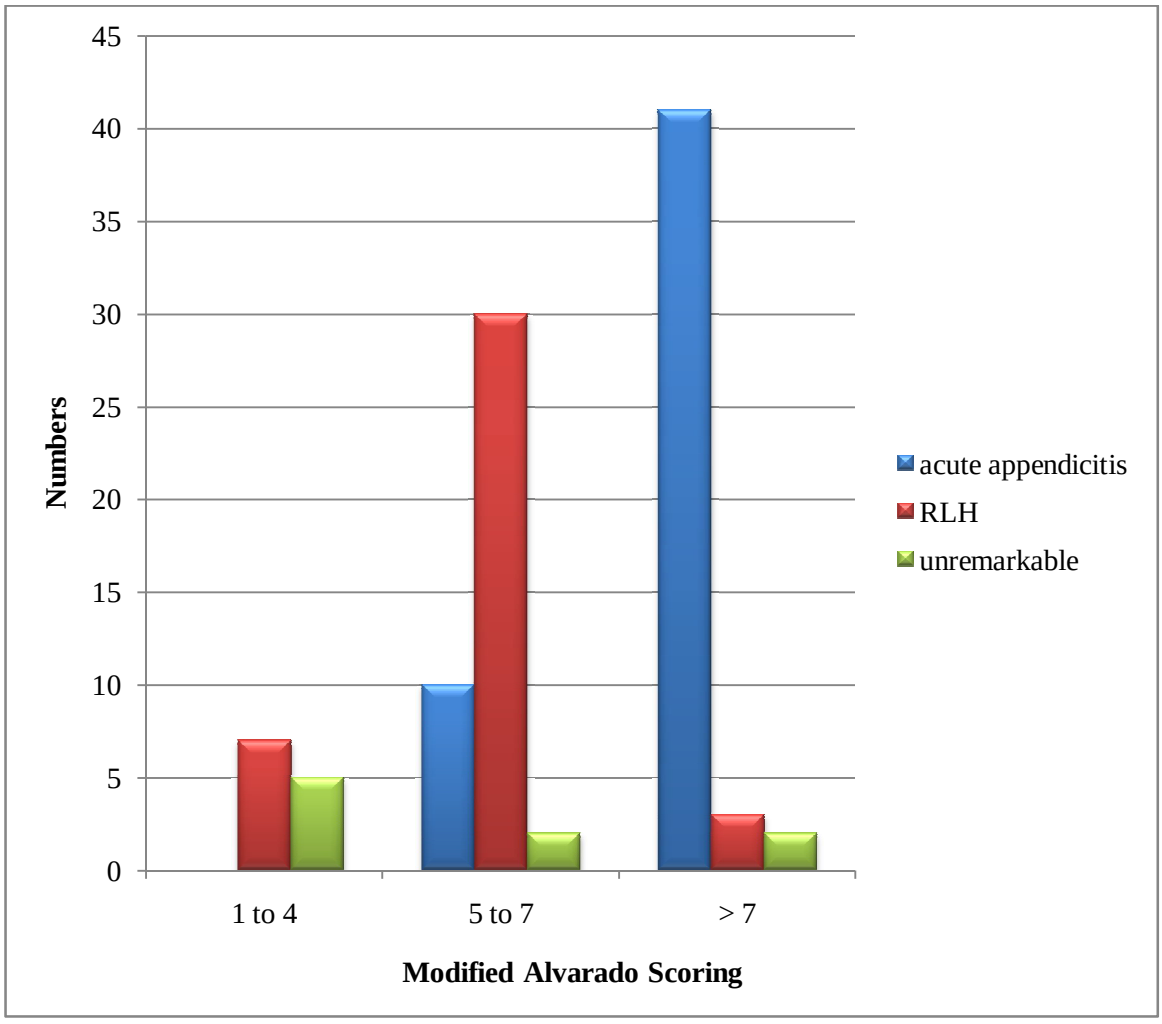
TABLE- 5

CORRELATION OF MODIFIED ALVARADO SCORE WITH HISTOPATHOLOGY IN ALL THE PATIENTS

MODIFIED ALVARADO SCORE	ACUTE APPENDICITIS		RLH		UNREMARK-ABLE		TOTAL	
	NO.	%	NO.	%	NO.	%	NO.	%
1-4	0	0	7	58.3	5	41.7	12	100
5-7	10	23.8	30	71.4	2	4.8	42	100
>7	41	89.1	3	6.5	2	4.4	46	100

None of the patients have the pathological features of acute appendicitis in the score of 1-4 in both the sex. It was about 58.3 % (7/12) were seen with reactive lymphoid hyperplasia and of 41.7 % (51.2) with unremarkable in histopathological correlation

CORRELATION OF MODIFIED ALVARADO SCORE WITH HISTOPATHOLOGY IN ALL THE PATIENTS IN BAR DIAGRAM



In the correlation of score 5-7 of both the sex that about 71.4%. Patients came there with reactive lymphoid hyperplasia which contribute of (30/42) patients, followed by 23.8% patients with acute appendicitis of (10/42) patients. The unremarkable pathology in this is (2/42) patients of 4.8%.

In patients with > 7 score; acute appendicitis correlate to about 89.1% (41/46) patients; reactive lymphoid hyperplasia is seen in 6.5% (3/46) and unremarkable features is seen in 4.4% (2/46) of patients in this category.

This stages and correlations of p values about (p=0.0002) which is very significant calculated by using chi square test of association.

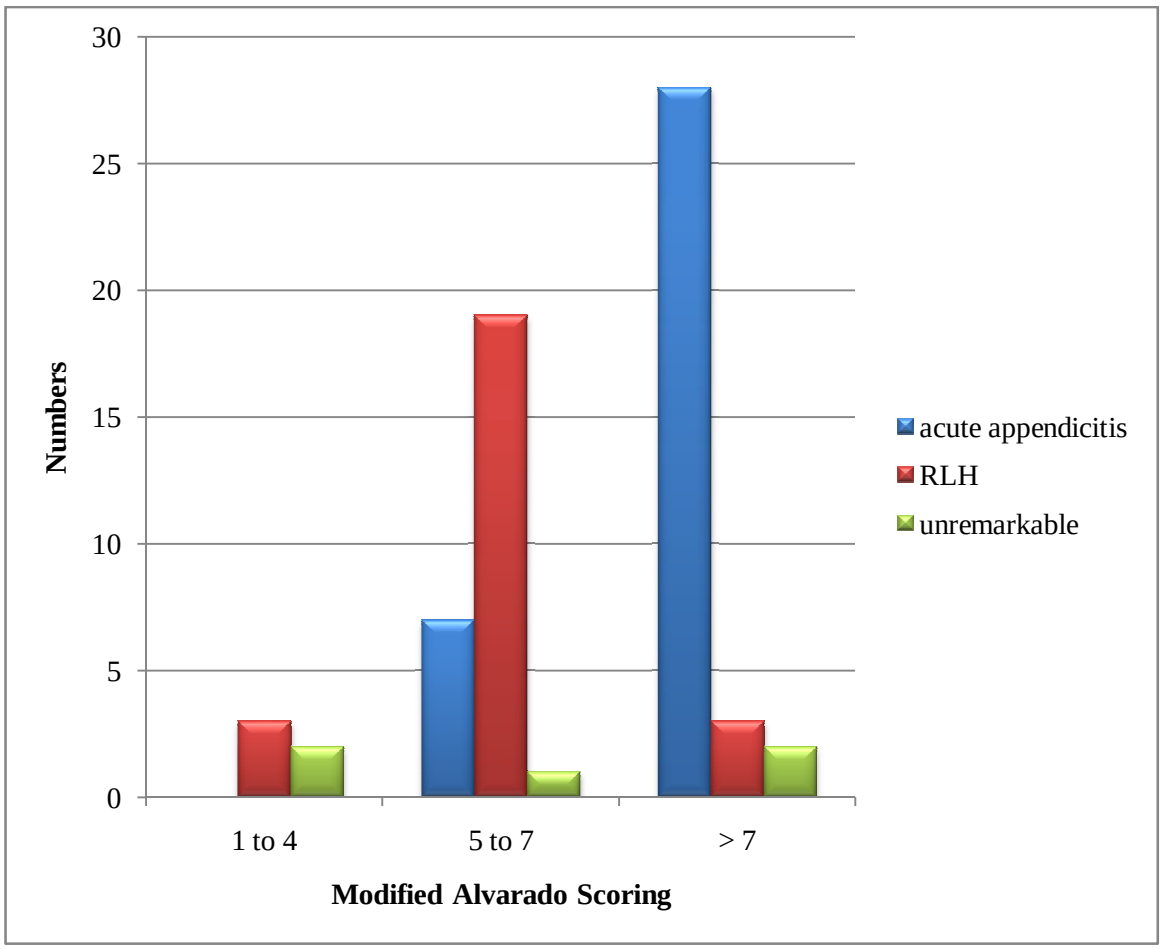
CORRELATION OF HISTOPATHOLOGICAL WITH MODIFIED ALVARADO SCORE IN MALES:

The following observation are made after correlating the alvarado scoring with the histopathologoical reports of appendicectomy specimens in males.

MODIFIED ALVARADO SCORE	ACUTE APPENDICITIS		RLH		UNREMARKABLE		TOTAL	
	NO.	%	NO.	%	NO.	%	NO.	%
1-4	0	0	3	60.0	2	40	5	100
5-7	7	25.9	19	70.4	1	3.7	27	100
>7	28	84.8	3	9.1	2	6.1	33	100

This shows that in the scoring of 1-4 .there was no patients in males. The reactive lymphoid hyperplasia is seen in about 60% (3/5) of patients in this scoring system. It was about 40% (2/5) of patients in the scoring system with unremarkable finding in histopathological.

CORRELATION OF HISTOPATHOLOGICAL WITH MODIFIED ALVARADO SCORE IN MALES



It shows that reactive lymphoid hyperplasia corresponds to about 70.4% (19/27) patient in this score of about 4-7, followed by 25.9% (7/27) patients in this group the least / unremarkable features in present in 3.7% (1/27) of patient of this category.

It shows significant correlation of about 84.8 % (28/33) patients in scoring >7 for the histopathological correlation. This is followed by about 9.1% (3/33) and 6.1% (2/33) of the patient with reactive lymphoid hyperplasia and unremarkable histopathological features.

This was correlated with significant in p value of about (p=0.0003) by using chi square test of association. This shows significant relation of the histopathological report with those alvarado scoring system.

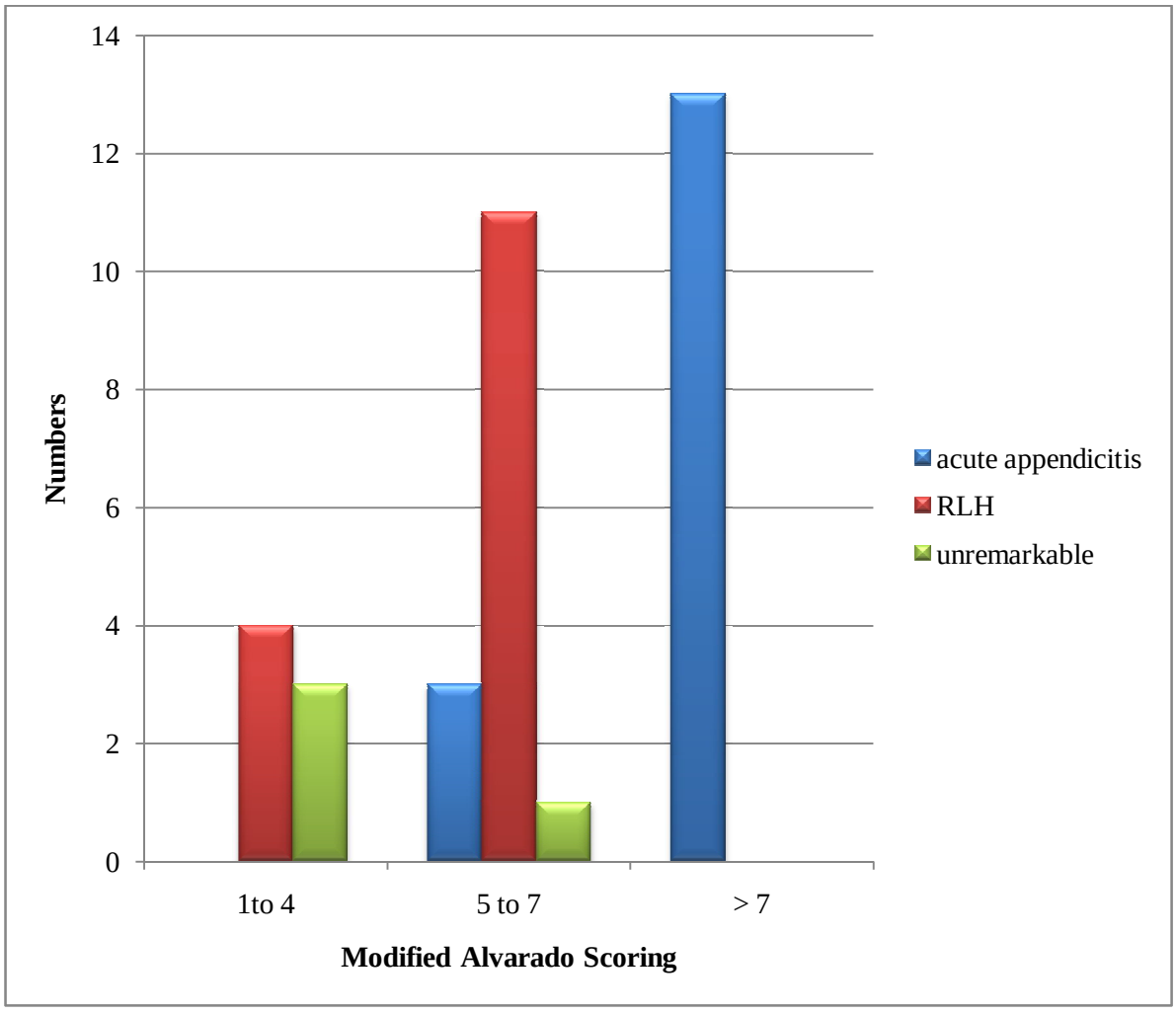
CORRELATION OF HISTOPATHOLOGICAL WITH MODIFIED ALVARADO SCORE IN FEMALES:

The following observation are made after correlating the alvarado scoring with the histopathological reports of appendicectomy specimens in females.

MODIFIED ALVARADO SCORE	ACUTE APPENDICITIS		RLH		UNREMARKABLE		TOTAL	
	NO.	%	NO.	%	NO.	%	NO.	%
1-4	0	0	4	57.1	3	42.9	7	100
5-7	3	20	11	73.3	1	6.7	15	100
>7	13	100	0	0	0	0	13	100

This study shows that in the scoring of about 1-4 no patients were seen in this category, the reactive lymphoid hyperplasia is seen in 57.7% (4/7) and 42.9% (3/7) patients are found in the remarkable histological reports.

CORRELATION OF HISTOPATHOLOGICAL WITH MODIFIED ALVARADO SCORE IN FEMALES IN BAR DIAGRAM



It Shows That Reactive Lymphoid Hyperplasia Is Seen In About 73.3% (11/15) Patient With Scoring Of About 5-7 And 20 % (3/15) Patient Acute Appendictis In The Scoring Of About 5-7 And 6.7% (1/15) Patient With Unremarkable Pathology In This Group.

It shows that significant correlation of about 100% (13/13) patients is seen in score of> 7 in the histopathological corrrelation following acute appendicitis in female. This shows a p value of about (p=0.0001) in this group of population which is tested by using chi square test of association. The p value is very significant from correlating in this group of people.

CONCLUSION

Modified Alvarado scoring is a good diagnostic scoring system used in day to day practice by all clinicians.It is a scoring system used for evaluation of acute appendicitis with score of less than 4.

Those whose scoring system is between 5 to 7, they are kept under observation and they are surveyed & re-examined for every 2 hours for the score to be increasing or decreasing.It is be taken as an added feature for an additional investigation to be carried out in this category of people like CT abdomen and the survey can be decided after additional investigations are obtained.

The plan for surgery (ie) emergency appendicectomy is recommended for the patients for score of more than 7. They are further managed & investigated post operatively with histopathological correlation.

Correlation of scoring with histopathology report was done simultaneously.the scoring of more than 7 shows the histopathological positivity of about 89% and 6.5% have been shown to be presented with reactive lymphoid hyperplasia.The unremarkable histopathology correlates to about 4.4%

It was found to be the patients with Alvarado scoring of about 4-7 with about 71.4%. its about 23.8% and 4.8% are those who presented with reactive lymphoid hyperplasia and unremarkable histo pathological feature.

The patient with scoring 1-4 presented with reactive lymphoid hyperplasia and unremarkable feature corresponds to about 58.3% and 41.7% in this scoring system respectively.

Hence we finally recommended to say that usage of modified Alvarado scoring system. It is used in the clinical diagnosis of acute appendicitis in emergency department. This causes reduction in false negative operation.

There are many other modalities /investigation for the diagnosis of acute appendicitis but clinical correlation was found to be superior to all clinically than all this investigation.The other investigation are used only additive/supportive informatory measures.The are most commonly used for confirmation in case of doubtful diagnosis.

In patient admitted with diagnosis of acute appendicitis modified Alvarado scoring system has been used.When the score is more than 7 appendicectomy is planned.When the score is 5-7 the patient is re-evaluated after sometime or with some other investigation.When the score is 1-4 then the can be usually observed & can be discharged with acceptable false negative results in this group.

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PROFORMA

ROLE OF MODIFIED ALVARADO SCORING IN ACUTE APPENDICITIS AND ITS HISTOPATHOLOGICAL CORRELATION IN GVMCH

NAME : AGE / SEX :

OCCUPATION : DATE OF ADMISSION :

ADDRESS :

CONTACT NO.

PRESENTING COMPLAINTS :

ABDOMINAL PAIN :

FEVER :

NAUSEA :

VOMITING :

OTHERS :

PAST HISTORY :

PERSONAL HISTORY :

MENSTRUAL HISTORY :

ALCOHOL :

SMOKING :

FAMILY HISTORY :

GENERAL PHYSICAL EXAMINATION

PR

BP

RR

TEMPERATURE

SYSTEMIC EXAMINATION

CVS

RS

CNS

ABDOMEN

INVESTIGATONS :

HB	RBS
WBC	UREA
PLATELET	CREATININE

MODIFIED ALVARADO SCORE

	CLINICAL FEATURES	SCORE	VALUE
SYMPTOMS	MIGRATORY RIF PAIN	1	
	ANOREXIA	1	
	NAUSEA / VOMITING	1	
SIGNS	RIF TENDERNESS	2	
	REBOUND TENDERNESS	1	
	ELEVATED TEMPERATURE	1	
LABORATORY	LEUKOCYTOSIS	2	

INTERPRETATION OF MODIFIED ALVARADO SCORE :

PATIENTS CONSENT FORM

STUDY DETAIL :

STUDY CENTRE :

PATIENT NAME :

AGE / SEX

ADDRESS FOR COMMUNICATION :

IDENTIFICATION NO.

I confirm that I have understood the purpose and procedure of the above study. I have the opportunity to ask questions and all my questions and doubts have been answer to my complete satisfaction.

I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.

I understand that the sponsor of the clinical study, others working on the sponsors behalf, the Ethical Committee and regulatory authorities will not need my permission to look at my health records, both in respect of the current study and any further research that may be conducted in relation to it, even if I withdraw from the study I agree to this access.

However I understand that my identity will not be revealed to any third person or published unless as required under the law. I agree not to restrict the use of any data or results that arise from this study.

I hereby consent to participate in this study.

I hereby give permission to undergo complete clinical examination and diagnostic tests including haemotological, biochemical, radiological test.

Signature / Thumb impression

Patient Name and Address

Date : Place :

Signature of the investigator

Name of the investigator

Date : Place :

பங்கேற்பவர்களுக்கு ஆய்வின் விவரம்

செய்முறை விளக்கம் :

இந்த ஆய்வில் பங்கேற்பவர்களுக்கு அறுவை சிகிச்சை செய்து கொண்ட பின்பு, அந்த தசையை மருத்துவர் பரிசோதனை செய்து கொண்டு அதன் விவரம் தெரிந்து கொள்ள முழு மனதுடன் சம்மதிக்கிறேன்.

ஆராய்ச்சி நிலையம் :

பொது அறுவை சிகிச்சை துறை

அரசு வேலூர் மருத்துவ கல்லூரி மற்றும் மருத்துவமனை

வேலூர்

ஆய்வை மேற்கொள்ளும் மருத்துவ அணிக்கு உண்மையுடன் இருப்பேன் என்றும் உறுதியளிக்கிறேன். என் உடல் நலம் பாதிக்கப்பட்டாலோ அல்லது எதிர்பாராத வழக்கத்திற்கு மாறான நோய்குறி தென்பட்டாலோ உடனே அதை மருத்துவ அணியிடம் தெரிவிப்பேன் என உறுதியளிக்கிறேன்.

பங்கேற்பவரின் கையொப்பம் ..... இடம் .....

நான் .....

கட்டை விரல் ரேகை

பங்கேற்பவரின் பெயர் மற்றும் விலாசம் .....

.....

ஆய்வாளரின் கையொப்பம் ..... இடம் .....

நாள் .....

ஆய்வாளரின் பெயர் .....

இந்த ஆய்வில் பங்கு கொள்ள ஒப்புக்கொள்கிறேன். எனக்கு கொடுக்கப்பட்ட அறிவுரைகளின்படி நடந்து கொள்வதுடன் இந்த ஆய்வை மேற்கொள்ளும் மருத்துவ அணிக்கு உண்மையுடன் இருப்பேன் என்றும் உறுதியளிக்கிறேன். என் உடல் நலம் பாதிக்கப்பட்டாலோ அல்லது எதிர்பாராத வழக்கத்திற்கு மாறான நோய்குறி தென்பட்டாலோ உடனே அதை மருத்துவ அணியிடம் தெரிவிப்பேன் என உறுதியளிக்கிறேன்..

பங்கேற்பவரின் கையொப்பம் ..... இடம் .....

நாள் .....

கட்டைவிரல் ரேகை

பங்கேற்பவரின் பெயர் மற்றும் விலாசம் .....

.....

ஆய்வாளரின் கையொப்பம் ..... இடம் .....

நாள் .....

ஆய்வாளரின் பெயர் .....

MASTER CHART

S.No	NAME	AGE	SEX	IP.No.	MODIFIED ALVARADO SCORE	PROCEDURE	HPE	POST OPERATIVE
1	Anitha	27	F	889	8	open appendicectomy	acute appendicitis	Uneventful
2	Ravichandran	46	M	332	6	open appendicectomy	RLH	Uneventful
3	Manoharan	13	MCH	2822	3	open appendicectomy	RLH	Uneventful
4	Gokul	26	M	3692	5	open appendicectomy	RLH	Uneventful
5	Abdul kalam	15	M	4694	9	open appendicectomy	acute appendicitis	Uneventful
6	Babu	21	M	5073	8	open appendicectomy	acute appendicitis	Uneventful
7	Vijayalakshmi	30	F	4827	5	open appendicectomy	RLH	Uneventful
8	Ragavee	13	FCH	5204	3	open appendicectomy	unremarkable	Uneventful
9	Jegadeesh	13	MCH	4192	5	open appendicectomy	RLH	Uneventful
10	Manogaran	55	M	5257	8	open appendicectomy	RLH	Uneventful
11	Raguvaran	28	M	4877	8	open appendicectomy	acute appendicitis	Uneventful

12	**Mohammed**	**22**	**M**	**5737**	**7**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
13	**Swamynathan**	**47**	**M**	**5714**	**8**	**open appendicectomy**	**RLH**	**Uneventful**
14	**Ravikumar**	**34**	**M**	**3976**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
15	**Sabiyulla**	**27**	**M**	**6271**	**9**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
16	**Divyabharathi**	**27**	**F**	**5612**	**6**	**open appendicectomy**	**RLH**	**Uneventful**
17	**Geetha**	**22**	**F**	**8575**	**7**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
18	**Irfan**	**20**	**M**	**8581**	**7**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
19	**Kesavan**	**13**	**MCH**	**8558**	**5**	**open appendicectomy**	**unremarkable**	**Uneventful**
20	**Harish kumar**	**12**	**MCH**	**9142**	**6**	**open appendicectomy**	**RLH**	**Uneventful**
21	**Fathima**	**19**	**F**	**9183**	**4**	**open appendicectomy**	**RLH**	**Uneventful**
22	**Divya**	**17**	**F**	**10209**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
23	**Salmon**	**23**	**M**	**10601**	**7**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
24	**Muthu**	**35**	**M**	**11390**	**9**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
25	**Nadha gopal**	**21**	**M**	**11447**	**6**	**open appendicectomy**	**RLH**	**Uneventful**

26	**venkatesan**	**21**	**M**	**13711**	**7**	**open appendicectomy**	**RLH**	**Uneventful**
27	**samudi**	**20**	**F**	**13733**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
28	**mashthan ahamed**	**22**	**M**	**13798**	**6**	**open appendicectomy**	**RLH**	**Uneventful**
29	**priyadharshini**	**30**	**F**	**14601**	**9**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
30	**hafeez**	**18**	**M**	**13635**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
31	**theranasan**	**15**	**M**	**15051**	**6**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
32	**rajkumar**	**20**	**M**	**15685**	**5**	**open appendicectomy**	**RLH**	**Uneventful**
33	**muthu**	**27**	**M**	**15760**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
34	**krishnamoorthi**	**50**	**M**	**15732**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
35	**thamarai**	**21**	**F**	**16518**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
36	**ragesh**	**29**	**M**	**16922**	**8**	**open appendicectomy**	**RLH**	**Uneventful**
37	**divaagar**	**28**	**M**	**17136**	**9**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
38	**valarasan**	**15**	**M**	**17506**	**7**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
39	**nizamyudeen**	**28**	**M**	**17541**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**

40	**paranghamen**	**31**	**M**	**17703**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
41	**elavarasan**	**18**	**M**	**18124**	**7**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
42	**kannamma**	**25**	**F**	**18034**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
43	**john basha**	**17**	**M**	**18788**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
44	**ambethkar**	**25**	**M**	**19489**	**7**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
45	**dhandapani**	**29**	**M**	**19936**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
46	**aruna**	**30**	**F**	**21283**	**9**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
47	**abinaya**	**14**	**FCH**	**21802**	**4**	**open appendicectomy**	**RLH**	**Uneventful**
48	**fathima nisha**	**17**	**F**	**22160**	**7**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
49	**poovizhi**	**15**	**F**	**22374**	**6**	**open appendicectomy**	**RLH**	**Uneventful**
50	**soniya**	**17**	**F**	**22934**	**7**	**open appendicectomy**	**RLH**	**Uneventful**
51	**ramesh**	**27**	**M**	**23209**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
52	**keerthi vasan**	**13**	**MCH**	**24538**	**4**	**open appendicectomy**	**unremarkable**	**Uneventful**
53	**maniarasan**	**18**	**M**	**25147**	**9**	**open appendicectomy**	**acute appendicitis**	**Uneventful**

54	**kasim**	**35**	**M**	**26442**	**5**	**open appendicectomy**	**RLH**	**Uneventful**
55	**bharath**	**26**	**M**	**26825**	**9**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
56	**palavakodi**	**40**	**F**	**27166**	**5**	**open appendicectomy**	**RLH**	**Uneventful**
57	**rani**	**45**	**F**	**27530**	**6**	**open appendicectomy**	**RLH**	**Uneventful**
58	**moushina**	**13**	**MCH**	**28518**	**2**	**open appendicectomy**	**unremarkable**	**Uneventful**
59	**dhamodaran**	**25**	**M**	**28567**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
60	**deepa**	**23**	**F**	**29147**	**7**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
61	**shan basha**	**28**	**M**	**29844**	**8**	**open appendicectomy**	**unremarkable**	**Uneventful**
62	**rasul**	**21**	**M**	**29599**	**6**	**open appendicectomy**	**RLH**	**Uneventful**
63	**Geetha**	**37**	**F**	**31559**	**7**	**open appendicectomy**	**RLH**	**Uneventful**
64	**dinesh**	**24**	**M**	**32431**	**5**	**open appendicectomy**	**RLH**	**Uneventful**
65	**subashini**	**14**	**F**	**32936**	**3**	**open appendicectomy**	**RLH**	**Uneventful**
66	**vidhya**	**28**	**F**	**33991**	**6**	**open appendicectomy**	**RLH**	**Uneventful**
67	**sathyaraj**	**26**	**M**	**34063**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**

68	**kumerasan**	**21**	**M**	**34391**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
69	**govindaraj**	**25**	**m**	**35418**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
70	**taj**	**35**	**m**	**36825**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
71	**swathi**	**14**	**fch**	**37098**	**2**	**open appendicectomy**	**unremarkable**	**Uneventful**
72	**narmadha**	**12**	**FCH**	**37395**	**4**	**open appendicectomy**	**RLH**	**Uneventful**
73	**Vijayalakshmi**	**40**	**f**	**38647**	**5**	**open appendicectomy**	**RLH**	**Uneventful**
74	**lokeshkumar**	**12**	**mch**	**39053**	**3**	**open appendicectomy**	**RLH**	**Uneventful**
75	**gopinath**	**15**	**m**	**39565**	**6**	**open appendicectomy**	**RLH**	**Uneventful**
76	**manjula**	**28**	**f**	**39760**	**7**	**open appendicectomy**	**RLH**	**Uneventful**
77	**gowthaman**	**20**	**m**	**39985**	**5**	**open appendicectomy**	**RLH**	**Uneventful**
78	**sivasakthi**	**16**	**m**	**40264**	**6**	**open appendicectomy**	**RLH**	**Uneventful**
79	**priya**	**22**	**f**	**40374**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
80	**velayudam**	**48**	**m**	**40520**	**6**	**open appendicectomy**	**RLH**	**Uneventful**
81	**aswin**	**13**	**MCH**	**44680**	**5**	**open appendicectomy**	**RLH**	**Uneventful**

82	**manikandan**	**17**	**m**	**44740**	**5**	**open appendicectomy**	**RLH**	**Uneventful**
83	**geetha**	**38**	**f**	**44812**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
84	**parimala**	**45**	**f**	**44834**	**6**	**open appendicectomy**	**RLH**	**Uneventful**
85	**ilayarasi**	**35**	**f**	**45253**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
86	**mumtaj**	**38**	**f**	**45331**	**5**	**open appendicectomy**	**unremarkable**	**Uneventful**
87	**sathya**	**28**	**f**	**45342**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
88	**kumerasan**	**22**	**m**	**45885**	**9**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
89	**ramalingam**	**41**	**m**	**46396**	**6**	**open appendicectomy**	**RLH**	**Uneventful**
90	**kuppammal**	**52**	**f**	**46723**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
91	**suresh babu**	**21**	**m**	**47232**	**7**	**open appendicectomy**	**RLH**	**Uneventful**
92	**nandakumar**	**23**	**m**	**47591**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
93	**chandrasekar**	**42**	**m**	**49329**	**8**	**open appendicectomy**	**unremarkable**	**Uneventful**
94	**jeeva**	**19**	**m**	**49749**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
95	**janagar**	**30**	**M**	**50646**	**9**	**open appendicectomy**	**acute appendicitis**	**Uneventful**

96	**rajiv gandhi**	**29**	**m**	**50832**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
97	**naveenkumar**	**12**	**mch**	**50837**	**2**	**open appendicectomy**	**RLH**	**Uneventful**
98	**gowri**	**33**	**f**	**51609**	**9**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
99	**anthoniya**	**16**	**m**	**51703**	**8**	**open appendicectomy**	**acute appendicitis**	**Uneventful**
100	**vinothini**	**16**	**f**	**51802**	**3**	**open appendicectomy**	**unremarkable**	**Uneventful**
RLH : Reactive Lymphoid Hyperplasia								